

PROCESSING SERVICES MARKET

WESTERN EUROPE 1991

INPUT

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Processing Services Markets
In Western Europe 1991-1996

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The processing services vendor provides an information system - including computer equipment, software and/or data communications networks - the support and operational staff and necessary back up facilities to provide a client with an information processing service. The processing services sector comprises transaction processing, utility processing and other services. This latter category includes computer output microfilm (COM), scanning and other data entry services, laser printing, back-up and disaster recovery services.

This report provides an assessment of the processing services market in Western Europe including a forecast of market growth for the period 1991-1996. Individual country market assessments are included. Key competitors in the market are identified and important influences on market growth discussed together with indications concerning future development of the sector.

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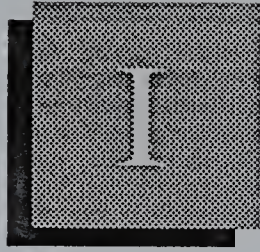
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Introduction



I Introduction

A Objectives

This report has been produced as part of INPUT's Western European Market Analysis Programme for the computer software and services industry. The objective of the report is to provide an assessment of the processing services market in Western Europe. This assessment includes:

- an analysis of the overall size of the market and its subsectors;
- a forecast for market growth for the period 1991-1996;
- an analysis of leading competitor's market shares;
- a commentary on major market trends and issues.

B Scope

This report covers all countries within Western Europe. The processing services sector is defined as comprising three sub-sectors:

- Transaction processing
- Utility processing
- Other processing

The "other" category includes such services as computer output microfilm (COM), scanning and other data entry services, laser printing, back-up and disaster recovery services. Exhibit I-1 describes INPUT's overall classification of the computer software and services industry. A detailed definition of the processing services (and related systems operations) sectors is provided in Volume I Section G of the Market Analysis Programme ring-binder.

C **Methodology**

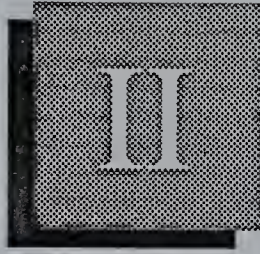
The research that contributed to this study was derived from the following sources:

- The processing services report published by **INPUT** in 1990. This report contained additional material, particularly on the disaster recovery services market.
- **INPUT**'s on-going research of the Western European software and services market which includes the collection of revenue and service product data from over 400 vendors annually. Over 50 of these are significant vendors of processing services.
- The use of **INPUT**'s extensive library facilities which include vendor literature and press releases as well as trade press, newspaper and magazine articles.

D **Report Structure**

The remaining chapters of this report are organised as follows:

- Chapter II contains an executive overview of the processing services sector.
- Chapter III describes the overall market for processing services in Western Europe and identifies the leading vendors.
- Chapter IV provides the detailed market forecast and competitive data for each country market.
- Chapter V gives profiles of a selection of major European vendors who offer processing services .
- The appendix contains a reconciliation between this years and last years analysis and forecast.



Executive Overview



II Executive Overview

A Limited Recession in Processing Services

Compared to other software and associated service markets, processing services have been the least affected by the continued general business recession. Small business failures have been reducing the client base for many vendors. But this has been largely counteracted by an increase in outsourcing as organisations seek further cost reductions in their IS (information services) expenditure. Specialised applications continue to evolve to offer vendors some important opportunities which are likely to see growth achieve an annual average rate of 7% to take the market to \$13 billion (ECU 9.7 billion) by 1996 in Western Europe. Key opportunities for processing services vendors lie in developing critical applications skills in areas such as payroll and credit card processing and offering specialised services like disaster recovery support.

Economic recession in most European countries is leading to high levels of business failure. This is losing many processing services vendors significant numbers of their smaller clients as they go out of business. However recession also feeds the trend to outsource more IS activities as companies review the financial savings to be gained from buying-in services rather than using in-house resources. There are many more potential clients now ready to listen to a sound financial case for using external processing services.

The general business and technological environment have changed considerably since the early 1980's when processing services suffered in competition with low cost minis and personal computers. Now the emphasis has changed from the ability to offer purely computer technical expertise to an emphasis on the applications being run. In consequence vendors that have built up knowledge and experience of specialist areas like payroll processing have prospered as the demand for specific applications transaction processing services has continued. In contrast, utility processing, the provision of basic processing facilities, has declined. Other specialist opportunities, like disaster recovery services have, however, represented an area of significant opportunity.

In order to exploit the trend to outsourcing, processing services vendors can continue to develop their applications skills to develop and further support applications based services. Alternatively they can seek to leverage their experience and knowledge into associated markets. For example, their technical skills can form the basis of a professional services business, applications run on a processing centre can be developed as software products, and their management skills can be translated into the systems operations area.

B
Processing Services Market Growth

During the 1980's growth in the processing services sector averaged only 11% per annum against a rate of 25% for the total software and services industry. Despite this relatively lower rate of growth the processing services sector is still a substantial business area and is set to offer significant growth over the next five years, as is shown in Exhibit II-1.

Exhibit II-1
Processing Services
Market Forecast Western Europe,
1991-1996

	\$ Millions		
Subsector	1991	1991 1996 CAGR (Percent)	1996
Transaction Processing	8,360	7	11,750
Utility Processing	275	4	330
Other Processing	735	11	1,240
Total	9,370	7	13,320

Exhibit II-2 gives the same consolidated figures for the whole Western European market, but in ECUs.

Exhibit II-2
Processing Services
Market Forecast
Western Europe, 1991-1996

ECU Millions			
Subsector	1991	1991 1996 CAGR (Percent)	1996
Transaction Processing	6,110	7	8,600
Utility Processing	200	4	240
Other Processing	535	11	910
Total	6,850	7	9,740

Opportunities for delivering an information system business solution as a processing service are most likely to have the following characteristics:

- the need for a rapid response to changing conditions;
- flexibility in delivering the service to end-users;
- a need for customisation to meet a variety of different requirements;
- a need for the vendor to take responsibility for the service.

The more customised the application, the more industry specific it is, then the more flexible the vendor must be in the approach to supplying the service and supporting the client. The greater the effectiveness of the vendor in achieving this, the higher the level of client acceptance. In consequence the processing service is less vulnerable to replacement by some other approach.

The principal driving forces of the processing services sector can be summarised as:

- the inertia of current users who are content to stay with the convenience of the existing service;

- the need for a time critical solution that can not be met in-house;
- the development of processing services as a result of increased interest and acceptance of the concept of "outsourcing";
- innovation and specialisation on the part of processing services vendors who can as a result offer superior capabilities than available in-house. Disaster recovery services would be a particular example of specialisation.

The principal inhibiting forces acting on the processing services sector can be summarised as:

- the further development of mini,micro and workstation application platforms undermining the cost performance capability of a processing service.
- the cost of market entry as a processing services vendor is relatively high and this combined with the image of the sector as "old-fashioned" has affected both the demand and supply side of the equation;
- user concerns for control and security for their applications is also an important consideration in inhibiting demand.

C Environmental Change

The continuous changes in the technology and cost-performance of computer equipment and the increasing importance of information systems to user organisations have changed the environment for processing services. Four key aspects concerned with the provision of a processing service, listed in Exhibit II-3, have altered in their relative importance as a result of the changed environment.

The improvements made in the development of standard software environments have limited the opportunities for processing services vendors to market "technical features" as a key benefit. Consequently this aspect has declined in importance.

Exhibit II-3**Processing Services
Factors for Change**

- Eroded Technical Edge
- Application Knowledge-Base
- Downsizing of Hosts
- Downsizing of Key Applications

However, specific applications knowledge and experience has emerged as perhaps the key competitive differentiator for a processing services vendor. The development of new service features to meet the clients changing applications need becomes a key priority. Some successful processing services vendors would actually claim that they understand the client's application better than the client. The applications aspect has thus become of increasing importance to the vendor.

It is increasingly important for the provider of the service to be the owner and developer of the applications software. The vendor can then adapt it as the needs of the market change and as new technological developments provide potential new solutions.

This emphasis on the provision of unique application features reduces the relative importance of the costs of a processing service. Most processing services vendors do not view the market as price-sensitive, clients place increasing emphasis on other factors such as reliability and responsiveness but most especially on the unique availability of the application.

Finally, the people required by the vendor to supply and run the service retain their overall level of criticality. Service quality always has been and will remain a significant element in the provision of a processing service.

D The Competitive Environment

The processing services environment in Western Europe is characterised by its composition as a set of individual national markets each with its own leading vendors. Only two vendors can be considered as operating on a truly pan-European scale and these two, IBM and GEIS, occupy leading positions in the market (first and eighth). The list of five leading processing services vendors is provided in Exhibit II-4.

Exhibit II-4

Leading Vendors Processing Services Western Europe, 1990

Vendor	Country of Origin	Estimated Sector Revenues (\$ Millions)
IBM	U.S.	350
Datev	Germany	280
Finsiel	Italy	245
Sligos	France	185
Axime	France	140

It is also interesting to note that the two pan-European processing services vendors, IBM and EDS, are both American owned. An analysis of the leading 40 vendors in this market sector indicates that they account for some 27% of their combined revenues. France is the next most well represented country of ownership, accounting for some 22% of the top vendor's combined revenues.

Datev the second largest processing services vendor in Europe operates entirely within the German market thus underlining the fragmented nature of the European market. Of the top 40 vendor's revenues, German owned companies account for just over 14% of the total.

An analysis of the number of vendors by country of ownership amongst the leading forty shows France clearly in the lead with 11 vendors. The analysis shows:

• France	11
• US	5
• UK	5
• Germany	4
• Sweden	4
• Norway	3

E
Transaction Processing

This is the dominant sub-sector of the market accounting for some 90% of the total processing services sector in 1991. The market is expected to grow from \$8.4 billion (ECU 6.1 billion) in 1991 to \$11.8 billion (ECU 8.6 billion) in 1996, an average compound annual growth rate (CAGR) of 7%.

This part of the market is characterised by a strong need on the part of clients to find an external source for an application. The most frequently quoted example is that of payroll services, regarded as the "ideal" transaction processing service. The payroll application is required by all organisations across all industry sectors, but represents very real difficulties for in-house IS departments because it is subject to frequent changes in tax rates and other government legislation. Contracting out payroll processing provides a solution to these problems with costs matched to the number of personnel since it is generally priced on a transaction basis.

The transaction processing services area also offers the opportunity to develop additional application modules that enhance the overall value to the client and reduce the impact of price competition from other vendors. Thus in the case of payroll applications there are extensions towards other human resources related applications.

The processing services vendor needs to maintain a cost effective efficient reliable service to retain the business on a continuing basis. When the client perceives that it would be extremely difficult to replicate the convenience of the externally provided service then a considerable degree of client lock-in has been created. The cost case, in this situation, would have to be overwhelmingly in favour of the in-house approach for the processing service to be terminated.

Key features of transaction processing applications are:

- volume pricing;
- networking capability;
- application specific focus;
- technological parity;
- high level of support service.

F

Utility Processing

The size and expected growth in the Western European utility processing sub-sector are shown in Exhibit II-5. It is in this area that the decline in interest in processing services has been most marked.

Utility processing services are designed to meet the needs of users requiring access to basic computer facilities, basic computer power and the appropriate tools that provide an environment where applications can be developed and/or tailored to meet specific requirements. Typically the vendor provides access to the computer centre through a communications network, with software tools and consulting support to enable the user to develop and run the specific applications being created.

Typical situations where utility processing services might be required are:

- the users local processing, storage or memory capability are too limited for a particular need;
- the applications is periodic, the intensity of use is difficult to predict;
- running the application requires special skills.

Additional reasons for using utility processing services might include the need to gain access to specialised statistical or graphics packages that are only required on an intermittent basis or to afford the opportunity to try new software products prior to a commitment to in-house use.

As large computer centres become more and more hidden from the user (eg "lights-out computer centres") so the need for the user to own the system diminishes. This raises again the old concept of the computer utility. Now the motivation for using a processing service is not access to expensive computational power but access to professional operation of a multi-dimensional complex of computers, communications, software and skills. The developing trend to outsource systems operations could generate additional utility processing business provided on a "pay as you go" basis.

G

Other Opportunities

In addition to the transaction processing and utility services sub-sectors there exist other opportunities for the provision of processing services and these are grouped under the heading of other processing services. The main types of service in this sub-sector can be listed as:

- Computer Output Microfilm (COM) Services;
- Computer Output Laser Printing;
- Disaster Recovery and Back-up Services;
- Carry-in Data Entry Services.

The most significant of these areas as a growth opportunity is that of Disaster Recovery Services which is forecast to grow at over 20% pr annum, a very high rate compared to the overall processing services sector. Disaster Recovery Services are discussed in more detail in INPUT's 1990 report on the processing services sector.

Computer Output Microfilm (COM) services are well established as a cost effective way of storing and retrieving large amounts of digitized information. Until CD-ROM or image processing systems with sufficiently high density capacity become more readily available at an economic cost, the COM market will continue to maintain an important place in the industry. In the future it is likely that this market will co-exist with the development of a market for CD-ROM and optical storage based services.

H

Development and Diversification

The environmental change being experienced by users presents important challenges to processing services vendors. Essentially the opportunities open to them lie either in the development of processing services or in diversification, building new service products in associated areas.

The principal development path for processing services vendors lies in the area of extending the applications coverage offered. The increasing overall importance of the application knowledge and experience to the processing services vendor was commented upon in Section B above, Exhibit II-5 lists some important examples of application development as processing services opportunities.

Exhibit II-5**Development Opportunities**

- Human resources
- Credit card processing
- Publishing/mailing
- Reservation systems

Human resources applications are a natural extension from basic payroll processing services and these can be offered as distributed applications on personal computers. Credit card processing and associated services are a natural addition and replacement for cheque processing services.

Additionally opportunities exist in areas like publishing where powerful laser printers are used to support printing and distribution services using computerised mailing lists. Reservation systems, for hotel chains for example, are another potential processing services applications area.

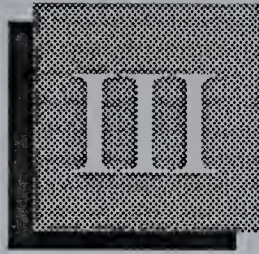
The availability of low cost powerful mini-computers and stand alone PC's and workstations was originally the major cause of a move away from processing services. Today personal computers and workstations have become so well established that they create a demand for additional applications performance that can be met by the processing services delivery mode. For example, in the centralisation and consolidation of financial planning information and in the need for high quality printing services generated out of desk-top publishing systems.

Other opportunities continue to exist in the strategy of diversification away from processing services, a path taken by many other processing services vendors in the past. The strategy is broadly diversification into:

- Application solutions
- Management skills
- Technical skills
- Data communications

The emphasis on applications knowledge and expertise stressed earlier can be further exploited by means of application software products or turnkey systems. The communications links so necessary for the distribution of processing services applications can be extended and developed into the area of full network applications. This is perhaps one of the most difficult transitions to make, it is probably only an option for those companies with access to significant development funds. The network services opportunity requires the careful selection of current niche opportunities and the patient development of these over an extended timespan.

Other opportunities lie in the development of the human skill resources of the processing services vendor. Technical skills, whether in terms of information technology or of the applications can be exploited as professional services. The management skills required to run successful processing services centres can be leveraged into systems operations services.



Processing Services Market Analysis



III Processing Services Market Analysis

A Market Overview and Structure

Processing services had its origins in the 1960s and developed rapidly through to the end of the 1970's. The advent of lower cost mini and personal computers then slowed growth of the sector as in-house solutions became more economic. During the 1980's growth in processing services averaged only 11% per annum in comparison to annual average growth of 25% for the whole software and services sector. Nevertheless it is still a substantial sector and expected to achieve growth in excess of both inflation and the general growth of the whole Western European economy. Exhibit III-1 provides the overall market size and forecast assessment.

INPUT has traditionally split the processing services delivery mode into the two sub-sectors:

- Transaction, utility and other services
- Systems operations.

Systems operations is now separated out as a distinct delivery mode in **INPUT**'s overall industry definition, as described in Chapter I, and shown in Exhibit I-1. Systems operations has recently become an area of key vendor and user interest in Western Europe and is growing much more rapidly than the traditional forms of processing services delivery. For further information and analysis of the systems operations sector the reader is referred to **INPUT**'s Systems Management Programme research material.

This report focuses on the remaining areas of transaction, utility and other processing services. Detailed definitions of these three sub-sectors are provided in Volume I Section G-I.

The general justification for the continued development of the processing services market is that a significant number of user organisation are willing, and have the need, to off-load certain applications or processing requirements to third-party vendors. In fact during the current period of recession many user organisations are once more reviewing the wisdom of using in-house resources and the cost effectiveness of outsourcing many IS or DP activities to processing service vendors.

The size of the Western European market and the growth forecast over the next five years (see Exhibit III-1) indicate **INPUT**'s belief in the continued viability of this market.

The rapidly developing area of departmental systems, comprising super-micros and powerful workstations connected by local area networks, represents a significant challenge to both in-house IS departments and processing services vendors to deliver integrated solutions. Clearly though those vendors that can adapt to this challenge will create a market advantage for themselves.

Another important differentiating factor for the processing services vendor is that they take responsibility in many cases, not only for operation of the system but also for the development of the software required for the future. It is thus that a large processing services company can have a major advantage over an applications software products company.

In general the customer requirements for information systems can be best satisfied through the processing services delivery channel where the application needs have the following characteristics.

- A rapid response to changing conditions
- Flexibility in delivery mechanisms
- A need for customisation to meet a variety of requirements
- The need for vendor responsibility

In summary the more tailored, the more industry specific and the more flexible the information system, the more likely it is to receive a high level of client acceptance and thus be less vulnerable to replacement by some other approach.

B Market Size and Growth

1. Forecast Assumptions

The market assessments and forecasts provided in this report cover the period 1990 through to 1996 and assess end-user expenditure for processing services. Market sizes are assessed in local currency and converted into US dollars for aggregation and comparative purposes. The exchange rates used for this purpose are listed in Volume I Section G-II.

Forecasts are calculated in actual monetary terms and therefore include allowances for inflation, the inflation assumptions used for each European country forecast are also listed in Volume I Section G-II.

2. Market Forecast

Exhibit III-1 shows the overall forecast in U.S. Dollars for the total Western European processing services sub-sector markets of transaction, utility and other processing services. Each of these market sub-sectors exhibits a different forecast growth rate which is determined by varying market forces in these different types of service. Each sector is discussed separately below in sections C, D and E of this chapter.

Exhibit III-1
Processing Services
Market Forecast
Western Europe, 1991-1996

	\$ Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	7,850	8,360	8,960	7	11,750
Utility Processing	260	275	285	4	330
Other Processing	665	735	825	11	1,240
Total	8,770	9,370	10,070	7	13,320

Exhibit III-2 gives the same consolidated figures for the whole Western European market, but in ECUs.

Exhibit III-2
Processing Services
Market Forecast
Western Europe, 1991-1996

	ECU Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	5,730	6,110	6,550	7	8,600
Utility Processing	195	200	210	4	240
Other Processing	485	535	600	11	910
Total	6,400	6,850	7,370	7	9,740

Exhibit III-3 provides an analysis of the comparative size of the constituent country markets for the overall processing services delivery mode.

Exhibit III-3

Processing Services
Comparative Country Markets
Western Europe, 1991-1996

	\$ Million (Rounded)				
PROCESSING SERVICES	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Total (rounded)	8,770	9,370	10,070	7	13,320
France	1,947	2,067	2,223	8	3,009
Germany	1,673	1,783	1,958	7	2,563
United Kingdom	1,078	1,167	1,266	8	1,738
Italy	876	942	991	7	1,352
Sweden	457	478	500	5	603
Denmark	460	486	511	4	592
Norway	469	495	521	5	629
Finland	241	258	276	7	354
Netherlands	503	546	593	9	831
Belgium	216	228	241	6	301
Switzerland	283	308	327	8	447
Austria	153	161	167	5	208
Spain	287	314	343	9	473
Portugal	15	16	18	12	29
Greece	37	44	52	15	90
Ireland	75	79	83	6	103

Exhibit III-4 provides the same country by country analysis, but in ECUs.

Exhibit III-4

Processing Services
Comparative Country Markets
Western Europe, 1991-1996

	ECU Million (Rounded)				
PROCESSING SERVICES	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Total (rounded)	6,400	6,850	7,370	7	9,740
France	1,421	1,512	1,628	8	2,196
Germany	1,217	1,304	1,435	7	1,870
United Kingdom	788	852	923	8	1,271
Italy	639	687	722	7	986
Sweden	332	351	364	5	442
Denmark	337	354	371	4	434
Norway	343	360	382	5	461
Finland	177	188	201	7	258
Netherlands	366	397	431	9	603
Belgium	158	167	176	6	219
Switzerland	207	224	239	8	328
Austria	111	118	124	5	152
Spain	210	229	251	9	345
Portugal	14	15	17	12	27
Greece	35	42	50	15	86
Ireland	48	51	53	6	66

Exhibit III-5 illustrates the dominant position of the four largest country markets of France, Germany, the UK and Italy. Scandinavia, as a region, is also a significant market for processing services.

Exhibit III-5
Processing Services
Western Europe
Geographical Distribution, 1991

Country	1991 User Expenditure (\$ billions)	Proportion (percent)
France	2.1	22
Germany	1.8	19
Scandinavia	1.7	18
United Kingdom	1.2	12
Italy	0.9	10
Benelux	0.7	8
Rest of Europe	0.9	10
Total (rounded)	9.4	100

The principal factors affecting the overall growth of the processing services market are summarised in Exhibit III-6. The principal driving forces are:

- Present user inertia: Although much business has been lost to processing services vendors over the last decade there still exist many clients continuing to use these services in a similar way to that current fifteen years ago. The convenience factor of services is an important argument. A problem solved by a processing service can lead to a long-term commitment on the part of the user unless the price disadvantage becomes too great.
- Time critical solutions: Opportunities continue to occur for processing services vendors to meet the time critical needs of users. This could imply the need for periodic overloads or the need to respond quickly to a new application requirement, the resources for which do not exist in-house. The client base is having to make changes to internal systems at an ever-increasing rate, and a well conceived and implemented processing service product can provide a quick and relatively painless solution.

- Outsourcing trends (recession driven): The pressure of business recession is causing many organisations to review their IS (Information Systems) expenditures, primarily seeking cost reductions. Additionally in-house IS departments are coming under increasing pressure to meet the growing sophistication of user's requirements. The response to both pressures has been to increase the level of expenditure on externally acquired software and services. In particular the trend towards "outsourcing" the entire IS operation to systems operations services will inevitably drive a subsidiary level of processing services growth. This will happen as a result of increasing user awareness resulting from increased vendor marketing activity, since a number of leading system operations vendors, eg GSI, Data Sciences and EDS are also significant processing services vendors.
- Innovation/specialisation: Service solutions generically fit the need where innovation or specialisation are important factors and these driving forces will therefore continue to operate. Thus networking technological development (ie ISDN providing combined voice/data networks) will change the way data communications requirements are executed. This may increase barriers to normal processing services but will also open up new opportunities. Potentially low cost equipment and communications could open up service opportunities directly related to individual consumers. Retail, banking and insurance applications will emerge as significant consumer markets over the next ten years.
- Disaster recovery: Disaster recovery as a concept has been current in the computer industry for at least a decade, but it is being looked at afresh due to the general industry-wide move from old-fashioned batch processing to on-line transaction driven systems. This market niche is discussed in some detail in Chapter V of this report. The forces that are driving the development of this sector of the market include:
 - Increasing security consciousness within organisations as they place greater reliance on their computer operations.
 - Pressure from auditors, consultants and insurers for effective and professional contingency plans for computer systems.

Exhibit III-6

Processing Services - Market Drivers

Drivers
<ul style="list-style-type: none">• Present User inertia• Time-critical solutions• Outsourcing (recession driven)• Innovation/specialisation• Disaster recovery

The principal inhibiting forces for the processing services market are itemised in the lower half of Exhibit III-7.

- Micro/mini/WS solutions: The development of these platforms has had the highest impact on the utility processing services sector. Many users have moved work onto systems in these categories that was formerly developed, modified and run though the use of utility processing on a remote computing service. Single-user, repetitive, database or problem-solving applications that required limited processing resources thus moved from processing services to in-house systems. A similar trend has emerged for departmental systems with the increasing availability of powerful economical mid-range systems offering a wide range of applications software,
- Small business failure rates have risen well above the norm in the last twelve months. Germany is the only market not suffering from this consequence of recession. Since small businesses are a major source of revenue for processing services vendors they are suffering revenue reductions outside their control. This applies especially to payroll applications which have traditionally been a steady but growing source of business.
- Price/performance disadvantage: The rapidly improving cost-performance of smaller systems in comparison to mainframe systems has tended to put processing centres at a considerable economic disadvantage. The economic shift has had an impact on mainframe processing centre margins and this in a market exacerbated by a general shortage of staff who are expert in turning and programming large systems. The shift to smaller systems with an improved price/performance characteristic has also been accompanied by the increasing availability of new, easy-to-use software tools on these systems.

- **Market entry costs:** Another important factor in the high level of start-up costs involved in developing a processing services operation. New entrants will also be aware of the well entrenched position of the leading vendors in the market, which will also serve to deter new investment in an area that suffers from a poor market image. The poor image is one that exists on both the demand side and supply side, since processing services are often perceived as "old-fashioned" and outdated.
- **User concerns:** Another general inhibitor on the processing services market remains user concern over the control and security implications for their applications. This is particularly true for remote processing. Unlike the situation in the United States, even small and medium sized European banks are reluctant to allow an external vendor to provide processing services.

Exhibit III-7

Processing Services - Market Inhibitors

Inhibitors
<ul style="list-style-type: none">· Micro/mini/WS downsizing· Small business failure rates· Price/performance disadvantage· Market entry costs· User concerns

**C
Transaction Processing**

Transaction processing services represent the dominant sub-sector within the processing services delivery mode. This sub-sector is characterised by the clients need to off-load an application, often of a critical business nature, for example, payroll processing. The processing services vendor needs to maintain a cost-effective and efficient, reliable service to retain the business on a continuing basis. When the client perceives that it would be extremely difficult to replicate the convenience of the external processing service and that the cost case is not clearly in favour of the in-house approach, then considerable inertia has been created to retain the transaction processing service.

Key features of transaction processing applications are:

- Volume pricing
- Networking capability
- Applications - specific focus
- Technological parity
- High level of support service

One of the most significant benefits to the clients of a processing service is pricing per transaction, so that costs are kept in line with the service usage. This is particularly attractive to small and medium-sized companies, and users with seasonal business cycles.

The networking element can sometimes be the most significant part of the service. It can be difficult to distinguish between processing services and network services for some applications, but the added value of a networking infrastructure to move data around and provide easy access to data or results is a key competitive advantage over an internal IS solution which lacks these features.

Profitable processing applications tend to be standalone, and addressed to a specific application in order that the ease of solution is more justifiable without the complications of in-house IS interfaces. At the same time, it is possible to leverage the vendor's applications knowledge.

Processing applications provide a high level of technology that is transparent to the client, that is to say, that the aim is for technological parity rather than technological advantage. The key benefits for the user are the low risk, the speed with which a solution can be obtained, and the high quality of support. Transaction processing applications are business solutions.

Payroll is often regarded as the "ideal" transaction processing service. The application is required by all organisations across all industry sectors, but represents very real difficulties for in-house IS departments because it is subject to frequent changes in tax rates and other government legislation. Contracting out payroll processing provides a solution to these problems with costs matched to the number of personnel. To counter price competition in this market vendors are moving to the integration of other human resources related applications. However, to do this effectively vendors will have to offer distributed capabilities that allow for use at the user's site. There is thus a considerable need for interfaces between internal and external systems. The opportunity thus exists for payroll services vendors to provide human resource management systems at the customers site, linked to the payroll system which will have some processing (data entry and control and payroll management) provided locally, while the central systems is used for processing and deposit functions. Local services are likely to be provided through PCs and workstations. Tax-tables and software changes can be down-loaded through the network which will also be used as the switch to deposit systems.

D

Utility Processing

Utility processing services meet the needs of users requiring access to basic computer facilities, computer power and the appropriate tools that provide an environment where applications can be developed and/or tailored to meet specific requirements. Typically the vendor provides access to the computer centre through a communications network, with software tools and consulting support to enable the user to develop and run the specific applications being created.

The range of software tools provided might encompass DBMS's, 4GLs, sort routines, remote technical support, scientific and statistical libraries, graphics capabilities and financial modeling systems.

Typical situations where utility processing services might be required are:

- the user's local processing, storage or memory capability are too limited for a particular need.
- the application is periodic, the intensity of use is difficult to predict.
- running the application requires special skills.

A typical example of utility processing is that of super-computer processing services which will continue to exist as long as customers require the sheer power and size of a CRAY or similar systems. Small repetitive applications will shift to the mini-supercomputers category just as small time-sharing applications shifted to personal computers.

Utility services are often bought in on a project basis. A company might, for example, purchase time on a target machine during a conversion exercise prior to installation of their own machine. Naturally utility processing services meet users needs to handle overload situations on in-house systems.

Gaining access to specialised software such as statistical or graphics packages might represent an additional reason for using utility processing services. It would not make sense on in-house systems to accommodate a handful of users who need expensive special software or libraries on an intermittent basis.

It is these situations where access to special support skills necessary to utilise the software effectively becomes important as it is not just a question of efficiency of use of the software.

Utility processing services also afford users the opportunity for trying new software products prior to a commitment to in-house use. IBM's Information Network Service for example offers this facility to customers to test new software.

Another potential application of utility processing services is for the provision of inter-company or inter-location services which are not readily satisfied by local systems environments, particularly for a major system.

A factor which might stimulate some further growth in this sector is the rapidly developing systems operations market referred to earlier. This trend might generate some fall out revenues where a client receives a systems operation type service but does not commit to a long term contract (at least one year) and buys the service on a "pay as you go" basis.

As large computer centres become more and more hidden from the user, resulting from remote operation through networks and operator unattended capabilities ("lights-out computer centres"), so the need for the user to own the system diminishes. This raises again the old concept of the computer utility. The driving force for this development would not be the need to access expensive computational power (as originally conceived) but access to professional operation for a multi-dimensional complex of computers, communications, software and skills.

E

Other Processing Services

The other processing services sub-sector includes the following types of services:

- Computer Output Microfilm (COM) Services
- Computer Printing Services
- Disaster Recovery and Back-up Services
- Carry-in Data Entry Services

Computer output microfilm (COM) services are well established as a cost effective way of storing and retrieving large amounts of digitized information. Until CD-ROM or image processing systems with high density capacity become more readily available at an economic cost, the COM market will continue to maintain its position. It is likely to co-exist with the market development of CD-ROM and optical storage services. Advanced new technologies require heavy capital expenditure thus underlining the opportunity to supply service solutions to users.

Printing services provide another interesting area since, despite the predictions for a paperless future, there seems to be an increasing demand for directories, year-books, mailing material etc in a paper form. Powerful software facilities, data-base handling and text libraries for example, open up opportunities for processing services vendors to offer value-added services in information handling just not possible on personal computers and workstations with typesetting capability. A development of some significance in this area is the Standard Generalised Markup Language (SGML), ISO 8879. SGML embodies the concept of separating out the structure of a document from its style of presentation, identifying titles, headings and paragraphs and storing them in a database for selective retrieval. This development opens up opportunities for processing services vendors to provide sophisticated value-added information management services that produce printed documents with a flexibility and variety not readily available in conventional printing services.

The most significant opportunity within the other processing services sector remains that of disaster recovery services. The development of this market and the opportunities within it are discussed in detail in Chapter V of INPUT's 1990 report on the processing services market.

The increasing use of optical character reading (OCR), optical mark reading (OMR) equipment and the development of scanning technology for the desk-top has not stopped the need for basic data preparation services. As in any other area of processing services vendors maintain their competitive position by building on their expertise to lower unit costs and offer clients a specialised service that they cannot easily replicate in-house. The labour intensive nature of data preparation is clearly a major reason for using a bureau operation, thus avoiding staffing peaks or uneconomic operational size departments.

Competitive Environment

Exhibit III-8 lists the leading processing services vendors in Western Europe, ranked according to their overall revenues in 1990 consolidated into US dollars. The fragmented nature of this market is clearly shown with the following characteristics:

- The leading 10 vendors accounting for a market share of about 18%.
- The leading 20 vendors accounting for a market share of about 25%.
- The leading 40 vendors accounting for a market share of about 34%.

Exhibit III-8
Leading Vendors
Processing Services
Western Europe, 1990

Vendor	Country of Origin	Estimated Sector Revenues (\$ Millions)
IBM	U.S.	350
Datev	Germany	280
Finsiel	Italy	245
Sligos	France	185
Axime	France	140
GSI	France	120
Telekurs	Switzerland	115
GEIS	U.S.	100
AC Service	Germany	90
Concept	France	90
Total Listed		1,715



Country Market Analysis



IV Country Market Analysis

A
France

The forecast growth of the processing services sub-sectors in the French market are shown in Exhibit IV-1. These forecasts include an inflation assumption of 3% per year over the period to 1996 thus indicating an expectation of real growth at around the 5% per annum level.

Exhibit IV-1
Processing Services
Market Forecast
France, 1991-1996

	FF Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	10,100	10,700	11,500	8	15,500
Utility Processing	330	340	350	3	400
Other Processing	570	640	710	11	1,100
Total	11,000	11,700	12,600	8	17,000

The processing services sector in France contains a substantial contribution from the banking and financial sector which accounts for approximately one-quarter of the total market. Growth in this sector is likely to be relatively strong during the forecast period as de-regulation continues to create opportunities. Rationalisation and restructuring regional banks, for example, may create the need for computer processing services as these organisations integrate diverse systems and develop longer term information system strategies.

The leading vendors in the French processing services market are listed in Exhibit IV-2. Interestingly the French software and services market is characterised by the significance of large vendors partially or completely owned by banks. In the late 1960's and early 1970's many French banks "out-sourced" their internal IS (Information Systems) departments by establishing them as independent vendors. Today these companies are some of France's largest and most prestigious independent software and services vendors. Of the vendors listed in Exhibit IV-2 the following have substantial bank shareholders:

- Sligos, 63% owned by Credit Lyonnais
- SG2, 100% owned by Societe Generale

The competitive scenario in France may well be strongly influenced by the development of the systems operations market. It is likely that transaction processing services vendors will view the systems operations opportunity as a natural development of their business. Additionally other large vendors may well wish to acquire transaction processing companies simply as a platform for entry to this market. Companies having a strong network capability will appear increasingly attractive for acquisition in the support of this strategic objective.

Exhibit IV-2
Leading Vendors
Processing Services
France, 1990

Vendor	Country of Origin	Estimated Sector Revenues (FF Millions)
Sligos	France	960
Axime	France	735
Concept	France	565
SG2	France	455
IBM	U.S.	370
Telesystemes	France	360
GSI	France	345
Axone	France	140
Cegedim	France	100
CISI	France	75
Total Listed		4,105

B

Germany

Germany is the second largest country market for processing services in Europe at 2.8 billion DM in 1990. Additionally it should also be recognised that there exists a very substantial level of processing services provided by closed user groups, for example for banks. The revenues generated by these organisations are not included by **INPUT** in the market assessments made here since they are deemed to be captive to the owner organisations. **INPUT** estimates that this closed user group sector could be of the same order of magnitude as the free processing services market.

Exhibit IV-3 shows the forecast growth of the German processing services market. The overall compound average growth rate of 7% includes an inflation assumption of 2.7%. The unification of Germany in 1990 has meant that the market estimates have been adjusted to cover the whole territory previously defined as West and East Germany for the forecast period. However, the current size of the market in what was East Germany is considered to be insignificant in comparison to the total German market. Nevertheless it will doubtless open up opportunities as the economy develops.

Many of the factors that have been identified in other country markets such as cost pressures, out-sourcing and the impact of the systems operations market are also present in Germany, but it is believed that they will take longer to come into effect. The strength of the German economy and the additional burden of unification will delay the de-regulation and competitive pressures until the mid-to-late 1990's.

Exhibit IV-3

**Processing Services
Market Forecast
Germany, 1991-1996**

	DM Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	2,500	2,650	2,900	7	3,700
Utility Processing	100	105	110	4	125
Other Processing	210	240	280	15	480
Total	2,800	3,000	3,300	7	4,300

Increased foreign competition could however have some impact on the closed user group processing services companies placing pressure on them to focus externally on other areas of the market and compete as independent vendors. The two largest CUG centres, Fiducia and RRZ, already sell services outside their co-operative banking clients. Indeed Fiducia gains considerable levels of revenue in the open market, as can be seen in Exhibit IV-4 which lists the leading vendors in the German processing services market. Debis Systemhaus, now in a joint venture with Cap Gemini Sogeti in Germany, gains large captive revenues from about 40 data centres across the country for its parent - the Daimler Benz group.

Exhibit IV-4
Leading Vendors
Processing Services
Germany, 1990

Vendor	Country of Origin	Estimated Sector Revenues (DM Millions)
Datev	Germany	465
Fiducia	Germany	140
IBM	U.S.	110
AC Service	Germany	80
Alldata	Germany	60
Taylorix	Germany	60
Debis Systemhaus	Germany	40
Info AG	Germany	38
GEIS	U.S.	30
GSI	France	30
Total Listed		1,053

C
United Kingdom

The processing services market in the United Kingdom has undergone a significant relative decline in importance within the overall software and services market as users have moved from general purpose bureau and time-sharing operations to in-house solutions. As a result the UK processing services market is only about half the size of the French and German markets. Exhibits IV-5 shows the market size assessments and forecast predictions for the sub-modes of processing services in the UK. The overall growth rates indicated in these exhibits contain an inflation assumption of 7%, thus indicating real growth at only 4% per annum compound.

Another factor in the relative decline of the processing services sector in the UK has been the relatively strong development of the systems operations market. The high profile that the systems operations market has achieved amongst the vendor community and the awareness that this has generated in the user community effectively transferred business from one sector to the other. However, continued growth in the acceptability of "outsourcing" may also have the effect of generating some additional processing services business.

A number of important niche markets have developed in the UK processing services market that are based on specific applications, for example, payroll services and disaster recovery services. Key benefits that the processing services vendor can offer its clients include the networking infrastructure that provides the capability to offer distributed applications as well as the specialised applications experience.

Exhibit IV-5
Processing Services
Market Forecast
United Kingdom, 1991-1996

	Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	470	510	550	8	750
Utility Processing	15	16	17	5	20
Other Processing	70	75	85	11	125
Total	555	600	650	8	895

The leading vendors in the UK processing services business are shown in Exhibit IV-6.

Exhibit IV-6

Leading Vendors Processing Services United Kingdom, 1990

Vendor	Country of Origin	Estimated Sector Revenues (Millions)
Hoskyns (CGS)	U.K. (F)	30
IBM	U.S.	30
AT&T Istel	U.S.	25
Data Sciences [Thorn EMI]	U.K.	25
SD-Scicon	U.K.	16
ADP	U.S.	15
CMG (Computer Mgt)	U.K.	15
GEIS	U.S.	15
Centre-file	U.K.	8
Compower	U.K.	8
Total Listed		187

D Italy

The forecast growth of the processing services sub-sectors in the Italian market are shown in Exhibit IV-7. The inflation assumption for Italy, included within these forecasts, is 4.4% thus indicating a general growth expectation of 3% per annum.

Italian processing services companies have been benefiting from growth in the finance and public sectors as a result of efforts to improve efficiency. This has caused an increase in batch processing for such services as cheque clearing and the processing of prescriptions for the state health systems.

Exhibit IV-7

Processing Services
Market Forecast
Italy, 1991-1996

	Lira Billions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	980	1,050	1,100	7	1,500
Utility Processing	20	21	22	5	27
Other Processing	80	90	100	9	140
Total	1,080	1,160	1,220	7	1,665

This growth is expected to continue, but there is bound to be some rationalisation of the more than 1,100 retail banks. The imminent removal of exchange controls is an indication of the de-regulation to come. It is also anticipated that more French vendors will seek to acquire processing services companies in Italy. The leading Italian processing services vendors are listed in Exhibit IV-8.

Exhibit IV-8
Leading Vendors
Processing Services
Italy, 1990

Vendor	Country of Origin	Estimated Sector Revenues (Lira Billions)
Finsiel	Italy	300
IBM	U.S.	60
OIS (Olivetti)	Italy	50
Sopin	Italy	45
Enidata	Italy	30
GEIS	U.S.	23
Sarin	Italy	23
Cedacrinord	Italy	22
Data Management	Italy	20
Lombardia Informatica	Italy	15
Total Listed		588

E
Sweden

The Swedish processing services market is, relative to the overall software and services market, a significant business. It currently represents about 22% of the overall market which compares with a European average of about 14%. However the market is now undergoing considerable change as it is beset by overall economic weakness and the challenge of its relationship with the European Economic Community.

Exhibit IV-9 shows the comparative expected growth over the next five years for the three processing services sub-sectors. Given that the inflation assumption for Sweden is 6.3% it can be seen that the expectation is that the market will start to fall at around 1% per annum over the next five years. This can be partly attributed to the expected conversion of processing services applications into systems operations contracts and network services like EDI (Electronic Data Interchange).

Exhibit IV-9

Processing Services
Market Forecast
Sweden, 1991-1996

	SK Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	2,350	2,450	2,550	4	3,000
Utility Processing	50	52	54	3	61
Other Processing	165	180	200	12	320
Total	2,550	2,700	2,800	5	3,400

Exhibit IV-10 lists the leading processing services vendors in Sweden. As in Germany there exists a considerable level of closed user group processing services in Sweden which are excluded from INPUT's market definition since they are classified as captive. Three of these organisations generate together a level of revenues little smaller than the entire non-captive market. These three organisations, listed below with an estimate of their 1990 processing revenue, are:

- Kommunedata - Sek 1,000 million
- Spadat - Sek 600 million
- Bonniet - Sek 110 million

Exhibit IV-10

Leading Vendors
Processing Services
Sweden, 1990

Vendor	Country of Origin	Estimated Sector Revenues (SK Millions)
SKD Foretagen	Sweden	560
Sapia	Sweden	340
AB Programator	Sweden	230
Tietotehdas	Finland	140
WM Data Nordic	Sweden	140
Conor Information	Sweden	135
Lantbruksdata	Sweden	125
IBM	U.S.	80
Enator	Sweden	70
CRS Datacraft	Sweden	65
Total Listed		1,885

F
Denmark

Denmark is a country with an important processing services sector in terms of size, it accounts for some 29% of the entire software and services business. However, real growth is expected it be very low since the forecast data shown in Exhibit IV-11 includes an inflation assumption of 5% per annum.

Exhibit IV-11

Processing Services
Market Forecast
Denmark, 1991-1996

	DK Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	2,700	2,850	3,000	4	3,450
Utility Processing	57	59	60	2	65
Other Processing	180	195	205	6	265
Total	2,950	3,100	3,250	4	3,800

Exhibit IV-12 lists the leading vendors in Denmark, but excludes the two large government processing agencies, Datacentralen and Kommunedata, whose revenues are classified as captive. Datacentralen and Kommunedata, with transaction processing revenue of 510 million and 670 million Danish Kroner respectively, are, with PBS, the largest processing service agencies in Denmark.

If the European Commission is successful with the liberalisation of public procurement then Kommunedata and Datacentralen will find themselves under increasing pressure to compete in the open market. Together these two organisations generate revenues equivalent to about 40% of the open market for processing services.

G
Norway

Processing services is the largest delivery mode sector within the Norwegian software and services market, indeed over 35% of the entire market it represents the highest penetration for processing with services of any European country market. However, it is a sector that is coming under increasing competitive pressure from other delivery modes within an overall environment of poor economic performances. As in other Scandinavian countries there exists now a tendency to rethink the use of shared processing centres as a result of de-regulation.

Exhibit IV-12 depicts the market analysis and forecast of the Norwegian processing services sector. The forecast growth rates include an inflation assumption of 4.9% thus indicating no real growth expected in the market sector overall.

Exhibit IV-12
Processing Services
Market Forecast
Norway, 1991-1996

	NK Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	2,800	2,950	3,100	5	3,700
Utility Processing	60	62	64	3	71
Other Processing	185	200	220	9	310
Total	3,050	3,200	3,400	5	4,100

The second largest vendor in Norway is NIT (Norwegian Information Technology). This group was formed out of the reorganisation of the Kommundata organisation which comprised seven regional processing centres. These were broken up with the objective of reducing costs, but five of the centres were formed into the new groups of NIT.

This new group is making a strategic move into the commercial business sector, having previously been almost entirely focussed on Government sector activity. The total anticipated revenues for NIT for 1990 are at over NK 900 million. The structure of NIT was announced in May 1990 as six companies, two of which are joint ventures with Norsk Data, listed below:

- KDO
- Vest-Viken EDB
- KDV
- KDM
- NIT - Dataservice
- NIT - System

H Finland

Exhibit IV-13 shows the comparative growth projections for the processing service sub-modes of the Finnish market. The compound average growth rates shown in these exhibits include an inflation assumption of 5% thus indicating very little real growth expectation. At around 23% of the overall software and services market, the processing services sector in Finland has a similar level of penetration to that of the Swedish market. This compares to an overall European average of 14%, but at a lower level than that of the other two Scandinavian markets of Denmark and Norway.

The Finnish economy has become overheated recently after historically strong growth and consequently industry is less competitive overall. The Finnish government is making moves to de-regulate industry, all of which is likely to place further pressure in the processing services sector. Finland, of course, is situated in a unique position in respect of its opportunity to conduct trade within the Baltic States. However, given the economic problems of these countries, it is difficult to foresee any significant impact on the processing services sector in the near future.

Exhibit IV-13

Processing Services
Market Forecast
Finland, 1991-1996

	FM Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	860	920	980	6	1,250
Utility Processing	30	31	32	3	36
Other Processing	65	70	80	10	115
Total	960	1,020	1,090	7	1,400

I
Netherlands

Exhibits IV-14 provides market analysis and forecast data for the processing services sector sub-modes in the Netherlands. The market is expected to show some real growth since the inflation assumption included in these forecast is only 2.4%.

The Dutch economy, which is relatively small in comparison with those of France and Germany, for example, is already experiencing considerable merger and acquisition actively, particularly in banking, finance and insurance as de-regulation takes effect. Within the nature of the Dutch market this is likely to have a positive effect on the processing services sector.

Additionally, a significant part of the Dutch transaction processing sub-sector is represented by payroll processing. The Netherlands has very complex employment and tax codes which makes this type of processing service extremely attractive to many companies.

As elsewhere, there exists significant cost pressures on large mainframe datacentres which tend to assist the move towards systems operations activity. The increased acceptance of this form of out-sourcing can of course act as both a driver and inhibitor for processing services, dependent upon the size of the workload and the overall capabilities of the vendor to supply these different processing delivery modes.

Exhibit IV-14

Processing Services
Market Forecast
Netherlands, 1991-1996

	Dfl Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	755	820	890	9	1,250
Utility Processing	25	27	28	5	34
Other Processing	70	75	85	10	120
Total	850	920	1,000	9	1,400

The leading vendors in the Dutch processing services market are listed in Exhibit IV-15.

Exhibit IV-15

Leading Vendors
Processing Services
Netherlands, 1990

Vendor	Country of Origin	Estimated Sector Revenues (Dfl Millions)
Raet	Netherlands	95
Computer Centrum Nederland	Netherlands	40
ADP	U.S.	35
IBM	U.S.	30
CMG (Computer Mgt)	U.K.	30
GEIS	U.S.	20
Medsys	Netherlands	10
EDS	U.S.	8
Getronics	Netherlands	5
Data Sciences	U.K.	4
Total Listed		277

J
Belgium

The comparative forecasts for the processing services sub-modes in the Belgium markets are shown in Exhibit IV-16. Unlike the Netherlands growth expectations in this market are low given the inclusion of an inflation assumption of 3.3% within the growth rates shown in these two exhibits.

Belgium is a relatively small market which is further fragmented by the cultural and commercial division between the French speaking south and the Dutch speaking north. However Belgium, as the home of many European Economic Community institutions does have a strongly international outlook and is at the forefront of market outlook de-regulation. This environment is likely to encourage a greater move away from processing services towards systems operations than is expected, for example, in the Dutch market, a trend towards network services and away from processing services is also anticipated within the Belgium market.

Exhibit IV-16
Processing Services
Market Forecast
Belgium, 1991-1996

	BF Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	6,650	7,000	7,400	6	9,200
Utility Processing	230	235	240	2	260
Other Processing	600	650	700	8	950
Total	7,500	7,900	8,350	6	10,400

K
Austria

The processing services market analysis and forecast for Austria is shown in Exhibit IV-17. An inflation assumption of 2.6% included within the growth rates shown in these two exhibits indicates little expectation of real growth.

Austria, being currently outside the European Economic Community, is now facing short-term de-regulatory pressures. Additionally the impact of out-sourcing trends - moves towards systems operations contracts - as a defence against increasing large data centre cost increases, is expected to be slight within the Austrian market.

Exhibit IV-17
Processing Services
Market Forecast
Austria, 1991-1996

	Sch Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	1,590	1,680	1,750	6	2,200
Utility Processing	72	74	75	2	82
Other Processing	140	145	150	4	175
Total	1,800	1,900	2,000	5	2,450

L
Switzerland

Exhibit IV-18 shows the market analysis and forecast for the processing service sector in Switzerland. The growth rates shown in these exhibits include an inflation of assumption of 3.3% thus indicating an expectation of some real growth over the next five years.

As a market currently outside the European Economic Community, Switzerland is not anticipated to be beset by the de-regulatory forces affecting many other European countries.

Exhibit IV-18

**Processing Services
Market Forecast
Switzerland, 1991-1996**

	SF Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	315	340	360	8	490
Utility Processing	15	16	17	5	20
Other Processing	30	35	38	11	58
Total	360	390	415	8	570

M Spain

The Spanish transaction processing services market has experienced high growth as has the entire Spanish software and services industry. It is now anticipated that the real growth in processing services will average out at about 4% per annum as business shifts to other service delivery modes. The growth rates for the Spanish processing services sector are shown in Exhibit IV-19 which includes an inflation assumption of 4.7% per annum.

Many existing users of processing services will be moving to in-house systems, and of course there will be some additional shift into network services and systems operations. Many processing services vendors in Spain have already undertaken the classic move into software development services and turnkey systems supply in anticipation of the trend to in-house systems

The severe shortages of IS staff in Spain and problems with software quality are factors that have maintained the growth of processing until now, but which are anticipated to become less significant as the market matures.

Exhibit IV-19
Processing Services
Market Forecast
Spain, 1991-1996

	Ptas Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	23,300	25,500	28,000	9	39,000
Utility Processing	1,800	1,900	2,000	5	2,400
Other Processing	2,200	2,400	2,600	8	3,500
Total	27,300	29,800	32,600	9	4,900

Rest of Europe

It is expected that in the smallest country markets of Europe, Portugal, Greece, and Ireland, some underlying market growth will continue. Forecasts are shown in Exhibits IV-20 on. Greece faces very significant economic problems that are unlikely to permit any major developments in the market. Portugal, on the other hand, due to its close proximity to Spain, and the high level of Spanish investment in the country, may be more likely to experience a shift away from processing into the small equipment solutions market. It is interesting to note also, that there is evidence of a small systems operations market emerging in the Republic of Ireland.

Exhibit IV-20

Processing Services
Market Forecast
Portugal, 1991-1996

	Esc Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	2,100	2,300	2,600	13	4,200
Utility Processing	100	110	115	8	160
Other Processing	200	220	240	12	380
Total	2,400	2,650	2,950	12	4,750

Exhibit IV-21

Processing Services
Market Forecast
Greece, 1991-1996

	Dra Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	5,600	6,700	7,800	16	14,000
Utility Processing	300	350	690	11	600
Other Processing	500	600	700	15	1,200
Total	6,400	7,700	9,200	15	15,800

Exhibit IV-22

Processing Services
Market Forecast
Ireland, 1991-1996

	IR£ Millions				
SUBSECTOR	1990	1991	1992	1991 1996 CAGR (PERCENT)	1996
Transaction Processing	30	31	32	4	38
Utility Processing	1	1	1	0	1
Other Processing	6	7	8	11	12
Total	37	39	41	6	51



Vendor Profiles

V Vendor Profiles

A AB Programator

AB PROGRAMATOR

Adolfsbergsvagen 13
Box 20072
161 02 Bromma
Sweden
Tel: 46 8 799 3500
Fax: 46 8 98 7475

Chairman and CEO: Lars Irstad
President: Anders Skarin
Status: Public
Number of Employees: 2,740 (2,332 IT
Services)
Revenue (FYE 31-12-1990): SEK 2,068
million (SEK 1,664 million IT Services)

The Company

Programator was founded in 1964 by Lars Irstad and is currently ranked as the largest software and services group in Scandinavia. Programator expanded from its original business of IT services to become one of the largest service enterprises in the Nordic countries, with three independent areas of operation:

- Information Technology Services
- Financial Operations
- Technical Consulting

Programator had a turbulent year in 1990. While the results IT services increased sharply, income from technical consulting dropped, and financial operations generated a negative result of SEK -188 million. On a consolidated basis this meant a loss of SEK -101 million.

Programator's objective is to concentrate on the development of its IT services business during 1991-92. The goal is to sell the financial operations and technical consulting divisions.

This profile, only discusses Programator's Information Technology services business which accounts for 80 percent of consolidated sales. Revenues for IT services in 1990 were SEK 1,664 million an increase of 30 percent compared to revenues of SEK 1,284 million in 1989. Revenues including affiliated companies were SEK 2,021 million (SEK 1,899 million in 1989). During 1990, operations in IT services were mainly in IT consulting, systems operations and management consulting. Programator clients are mainly large and medium-sized companies and organisations. Geographically, operations are currently concentrated in the Nordic countries, and in Germany and Spain. The business in the Netherlands and the operations in hardware distribution have been sold.

Programator is registered on the A:I list of the Stockholm Stock Exchange. As of December 1990, Programator had 2,650 shareholders. Voting power is dictated by both the number and type of shares held with "A" Series shares carrying ten votes each and "B" Series shares carrying one vote each. The breakdown of the principal shareholders is as follows:

Exhibit A

SHAREHOLDERS		
NAME	CAPITAL	VOTES
Lars Irstad	28.1	34.4
Sandvik AB	7.3	26.7
Leif Pilhage	9.4	9.9
AGA AB	2.7	7.6
Sparbankernas Aktiefonder	9.1	3.3
WASA	2.1	3.0
Others	41.3	15.1

Sandvik AB has an option to acquire during 1992 additional shares (series A) from Lars Irstad and Leif Pilhage, amounting to a total voting percentage of over 50%.

Exhibit B

KEY EXECUTIVES	
NAME	POSITION
Lennart Bernard Anna Maj Bjorneberg	Financial Manager Corporate Relations

Programator's acquisition strategy is not to buy competitor companies with overlapping operations, but rather to acquire companies with complementary competence or geographic coverage.

Acquisitions during 1990:

- Ovako Steel's data processing department, with 30 employees and revenues of SEK 40 million.
- 40 percent of the Norwegian consulting company Computas with 170 employees and revenues of SEK 110 million. An option exists to acquire the remaining 60 percent within three years.
- The previously 50 percent owned Finnish company Baltic Data, with 80 employees and SEK 60 million in revenues, was acquired in full.
- Alfadata in Finland, previously 50 percent owned with Partek, with 45 employees and SEK 25 million in revenues, was acquired in full. Partek concurrently acquired also 50 percent owned Parcomp, with 45 employees and SEK 45 million in revenues.
- Swedish Nokia Data's DP department with 25 employees was acquired.
- KMW-Data and 20 employees and SEK 10 million in revenues was acquired.
- The DP department of Nokia Consumer Electronics in Germany with 42 employees was acquired.
- A consulting company in Kiel, Germany with 8 employees was acquired.

Divestments:

- Programator ceased most of its activities in hardware distribution by selling its 50 percent stake in Datacenter-gruppen, with 110 employees and revenues of SEK 250 million.
- 60 percent of Apple Center in Vasteras, Sweden, with 11 employees and SEK 20 million in revenues was sold.
- Programator Holland, with 15 employees and SEK 5 million in revenues was sold.

As of 1 January 1990, The Programator Group has two wholly owned subsidiaries:

- Finansor Holding AB (finance operations)
- Programator Data AB (information technology services)

Programator Data is the parent company for all information technology services companies within the Programator group.

AB Programator has a number of subsidiaries operating in Sweden and abroad. There follows an analysis of the principal Swedish subsidiaries and affiliate companies involved in Programator's Information Technology operations:

Exhibit C

PROGRAMATOR DATA AB SUBSIDIARIES

NAME	% OWNED BUSINESS AREA	
Programator Stockholm AB	100	Data Processing
Programator Norr AB	100	Data Processing
Programator Service AB	100	Data Processing
AU System Invest AB	53	Data
Communications		
S Partner i Kramfors AB	91	Data Processing
Programator Industri Lidingo AB	100	Data Processing
Programator Vast AB	100	Data Processing
Programator Mellansverige AB	100	Data Processing
Programator International	100	Data Processing
EP Data AB	50	Data Processing
Erisoft AB	50	Industrial
Technology		
Programator Vasterbotten AB	100	Data Processing
Programator Gavleborg AB	100	Data Processing
Jamtdata AB	50	Data Processing
CBI Context AB	100	Computer Based
Training		
Programator Gotaland AB	100	Data Processing
AS Partner i Helsingborg AB	100	Data Processing
Programator Teknik i Stockholm AB	100	Industrial
Technology		
Maxcimator AB	100	Data Processing
Programator Teknik AB	100	Dormant
Logimotor AB	100	Data Processing
Alpor Info Services AB	51	Data Processing
Programator Management AB	100	Dormant
Programator Vasternorrland AB	100	Data Processing
REDU Inc. U.S.A.	100	Data Processing
KJ Data AB	100	Data Processing
Programator Dalarna AB	100	Data Processing
Probe Data i Soderhamn AB	100	Dormant
Plus Affarssystem AB	100	Hardware
Distribution		
Datahuset i Klaralvsdalen AB	100	Dormant
Ericsson Programatic Sweden AB	50	Industrial
Technology		
Installationsdata AB	92	Hardware
Distribution		

Exhibit D

PROGRAMATOR DATA - AFFILIATED COMPANIES

NAME	% OWNED BUSINESS AREA	
Crawmator AB	50	Data Processing
Infonova Systems AB	50	Data Processing
Infosec Prosab AB	45	Information Security
Probix Software AB	50	Data Processing

Exhibit E

PROGRAMATOR INTERNATIONAL SUBSIDIARIES

NAME	% OWNED BUSINESS AREA	
A/S Computas, Norway	40	Data Processing
Carelcomp Oy, Finland	50	Data Processing

As of December 1990, IT services employed 2,328 staff, an increase of 18 percent over the year before (1,971). Including affiliated companies, the number of employees rised to 2,740 (1989, 2,614).

Exhibit F

1990 EMPLOYEE ANALYSIS (INCL. AFFILIATED COMPANIES)

EMPLOYEE CATEGORY	NUMBER OF EMPLOYEES
CONSULTANTS	2,137
PROCESSING	229
ADMINISTRATION	279
OTHER	177
TOTAL	2,822

The business concept of IT services is to offer the customer profitable use of information technology.

The strategy of Programator's IT services group of companies is to offer:

- Specialist competence in a number of areas, allowing Programator to solve virtually all types of problems encountered in its area of operation.
- High quality by delivering the agreed-upon product, with the right function and performance, at the agreed-upon time, terms and conditions.
- Proximity to its organisation through its geographical diversity, with 45 offices in the Nordic countries, four in Germany and one in Spain.

Programator is currently evaluating the possibility of becoming quality assurance system certified in accordance with ISO 9001, an international standard which is being adopted by more and more companies in Europe.

Programator's competitors on the data consulting side are Cap Gemini, WM-data and Enator. In systems operations Svenska Datacentralen and Enator are the major competitors.

Key Products and Services

Programator's IT services operations are divided into the following business areas:

- Data consulting
- Systems Operations
- Management consulting

Data Consulting

Data consulting includes administrative and technical systems development, specialist support and training.

Systems development and programming are performed for personal computers and minicomputers as well as mainframes. Most brands of computers are used with IBM, Digital Equipment and the many UNIX suppliers dominating. Programator handles assignments for all types of applications, both administrative and technical, and undertake the development of entirely new data systems and products as well as management and upgrading of old systems.

Specialist support in specialised technical areas and in work methodology is offered.

Training takes the form of either scheduled, open courses, or specially designed company-specific training.

Systems Operations (Facilities Management)

This category of services includes elements of conventional service bureau work. Data processing is handled for large and medium-sized companies. In the case of some clients, systems operations includes responsibility for systems development, management and administration.

Management Consulting

Management consulting includes support of client management in:

- Development of information strategies
- Business development of new services based on information technology.
- Organisation and control of corporate computer operations
- Procurement of new computers or data systems.

Market Analysis

Exhibit G shows the revenue analysis of Programator's IT services excluding affiliated companies.

Exhibit G

1990 MARKET ANALYSIS BY GEOGRAPHIC AREA (SEK MILLIONS)

COUNTRY	REVENUE	PERCENT
Sweden	1,384	83
Finland	175	11
Denmark	55	3
Germany	20	1
Spain	20	1
Norway	10	<1
TOTAL	1,664	100

The Danish operation produced an operating margin of over 15 percent.

After large losses over several years, the Germany operation produced a positive result.

The Spanish operation turned a loss in 1989 into a better than break-even result in 1990.

The Finnish operation increased its operating income, but with income before taxes reaching a level just below the previous year, due to one-time closing costs related to a number of small companies.

The development in Norway did not improve to the extent anticipated last year which resulted in a small loss again in 1990.

Due to market activities and cost-cutting actions, operations in Sweden also developed well. The result did not improve by more than SEK 7 million, primarily because it proved impossible to complete a major fixed-price contract within budgeted cost levels.

Exhibit H

1990 MARKET ANALYSIS BY OPERATIONS (AB PROGRAMATOR CLASSIFICATION AND ESTIMATES) (SEK MILLIONS)

OPERATION	REVENUE	PERCENT
Data Consulting	1,311	79
Facilities Management	293	18
Management Consulting	40	2
Distribution of Hardware	20	1
TOTAL	1,664	100

Exhibit I

1990 MARKET ANALYSIS BY INPUT DELIVERY MODE (SEK MILLIONS)

DELIVERY MODE	REVENUE	PERCENT
Processing Services		
Professional Services	1351	81
System Operations		
Hardware Distribution	20	1
TOTAL	1664	100

Financial Information

The following information is a summary of the Programator group's revenues for the past five years:

Exhibit J

FIVE-YEAR FINANCIAL SUMMARY FOR AB PROGRAMATOR (FYE 31-12)
(SEK MILLIONS)

Year	1986*	1987	1988	1989	1990
Revenues	1,614.0	1,936.7	2,313.7	2,650.7	2,068.5
Annual Growth Rate (%)	-	20%	19%	15%	-22%
Profit/Loss before Taxes	34.8	78.2	70.3	36.2	(91.6)
Annual Growth Rate (%)	-	125%	-10%	-49%	-
Profit/Loss after Taxes	22.4	41.9	34.6	18.0	(127.9)
Earnings per Share (SEK)	6.30	7.20	5.10	6.30	negative

* 8 months

Exhibit K

FIVE-YEAR FINANCIAL SUMMARY FOR IT SERVICES (FYE 31-12)
(SEK MILLIONS)

Revenue	1986	1987	1988	1989	1990
Annual Growth Rate (%)	704	925	1,143	1,284	1,664
Profit before Taxes	71	85	74	65	80
Profit after Taxes*	-	-	-	-	22

*Before 1990, IT services was only an operational group.

B

AC Service GMBH

AC SERVICE GMBH

Ruppmann Strasse 43
7000 Stuttgart
Germany
Tel: 49 711 788070
Fax: 49 711 7880729

CEO: Hugo Birrer
Status: Subsidiary of ACI AG
Number of Employees: 489
Revenue (FYE 31-12-90): SF 100 million

The Company

The company was founded in 1965. It is 100% owned by ACI AG. AC Service GmbH provides turnkey solutions, software products, professional services and processing services to most industry sectors.

Exhibit A

SUBSIDIARIES

NAME	COUNTRY	% OWNED
AC Service	Austria	100
Automation Center SA	Belgium	100
Automation Center AG	Switzerland	100

Exhibit B

KEY EXECUTIVES

NAME	POSITION
Herbert Werle	Director, Finance
Hans-Ruedi Hertig	Director, Sales and Marketing
Beat Finkbeiner	Director, Product MGT
Dirk Sonntag	Marketing Manager

As of December 1990, AC Service employed 489 staff.

Exhibit C

1990 EMPLOYEE ANALYSIS BY COUNTRY

COUNTRY	NUMBER OF EMPLOYEES
Germany	285
Austria	84
Belgium	40
Switzerland	80
TOTAL	489

Key Products and Services

AC Service's main products are:

AUDIAL is a high profile order processing system designed specially for wholesale and distribution companies. AUDIAL covers activities like sales order entry (processing), purchase order change, stock management and report writing.

DIBAC is an online modular standard program package for accountancy applications. Principal features are keeping of debtor, creditor and inventory accounts.

KORAC is a cost accounting software system. It incorporates main modules such as cost code, cost point costing, contract costing, retrospective calculations, job order costing, operating performance income statement.

KORAC is a comprehensive online dialogue system which has been tested within 150 installations in practice. It has an extensive analysis and evaluation facility and offers interface to other programs.

Market Analysis

Exhibit D

1990 MARKET ANALYSIS BY GEOGRAPHIC AREA (SF millions)

COUNTRY	REVENUE	PERCENT
Germany	56	56
Switzerland	19	19
Austria	13	13
Benelux	12	12
TOTAL	100	100

Financial Information

Exhibit E

FIVE-YEAR FINANCIAL SUMMARY (FYE 31-12) (SFR MILLIONS)

YEAR	1986	1987	1988	1989	1990
Revenue	74	81	85	91	100
Annual Growth Rate (%)		9	5	7	10

C
CMG (Computer Management Group) Ltd

CMG (Computer Management Group) Ltd

Carrier House
Warwick Row
London SW1E 5ER
United Kingdom
Tel: 44 71 630 7833
Fax: 44 71 630 6677

Chairman and Group Director: Douglas Gorman
Status: Private
Number of Employees: 1,575
Revenue (FYE 31-12-90): £ 96.2 million

The Company

CMG was founded in 1965 by Mr. Douglas Gorman. Since its foundation it has become one of the largest independent providers of management consultancy, processing services, software development and business systems in Europe.

CMG specialises in specific business areas including government, local authorities, public utilities, insurance, banking, building societies, manufacturing, distribution and retail.

The company has currently 1,742 shareholders who are mainly group employees. The largest shareholder is Mr Gorman, the founder, who owns 16.9% of the company.

Exhibit A

KEY EXECUTIVES

NAME	POSITION
Ron J. White	GM/Chairman, U.K.
Fander C. Waalboer	GM/Chairman, Germany
Gerard H. Lucassen	GM/Chairman, The Netherlands

In February 1990, DORA Computer Services BV in the Netherlands was acquired. The company supplies computerised payroll services together with customer specified computer software developments for payroll in the Netherlands.

In March 1990, CMG acquired Quadata BV, another computer services organisation providing payroll and facilities management services in the Netherlands.

In May 1990, Sysco GmbH and its subsidiary Sysber GmbH were acquired. The companies provide computer consultancy services to the banking and finance sectors.

During 1989, CMG acquired Mayne Nickless Computer Services Ltd., an organisation providing payroll services in the North of England.

CMG operates through 33 companies in the U.K., Germany and The Netherlands.

In December 1990, CMG employed 1,575 staff.

Exhibit B

1990 EMPLOYEE ANALYSIS

EMPLOYEE CATEGORY	NUMBER OF EMPLOYEES
Operating	1,169
Sales and Administration	243
Management	163
TOTAL	1,575

CMG's plans for the future is to maintain its independent position within the computing services industry, and acquire companies complementary to CMG as part of its continued expansion plans.

Key Products and Services

CMG has six principal areas of activity:

- Professional Services
- Software Products
- Processing Services
- Network Services
- Systems Operation
- Systems Integration

Professional Services

CMG provides consultants for all phases of the project life cycle from management consultancy through to systems design and development. The company has developed its own development methodologies which are:

- **COMMANDER** - an integrated project support environment.
- **ARCHIPEL** - a framework within which strategic business, organisation, information and automation planning can be undertaken.
- **PLOT** - a methodology to assist manufacturing companies to introduce new technology.
- **OFFICER** - used in the implementation of office systems.

Software Products

These include:

- **PAYFACT** - a personnel and payroll package which CMG installed in its Dutch and U.K. processing centres.
- **FACT** - a financial accounting package.
- **SHARE REGISTRATION** - a service to administer all aspects of the share registration business.
- **IMACS** - a London market underwriting and accounting package.
- **INFOBASE** - information management for charities, associations and membership institutions.
- **BASTION** - a building society system.
- **DUTY MANAGER** - a customs duty management system.

Processing Services

CMG has several processing centres in The Netherlands and the U.K.. The main activities are payroll processing services.

Network Services

CMG offers Value Added Network Services (VANS) which include:

- **ORDERLINE** - a service designed specifically for importers, suppliers and manufacturers who sell their services through a dealer network. This network gives the opportunity to order directly from a supplier via CMG.
- **CARLINE** - designed for car dealers to order their stock.
- CMG also operates, on behalf of Telekurs, an information service providing stock exchange information to clients in The Netherlands.
- **Kluwitel** - a new service available to Wolters Kluwer publishers.
- **Citibank/Diners Club** - a clearing system for Diners Club agents.
- CMG handles the yellow pages/home shopping network.

Systems Operation and Systems Integration

CMG offers the option to manage clients' payroll and general processing systems in-house.

CMG provides a full range of services to facility manage the clients' total system or the software alone.

About 20% of revenues are derived from systems integration contracts in various industries such as the hospital sector, local government, retail and distribution.

Market Analysis

Exhibit C

1989 MARKET ANALYSIS BY DELIVERY MODE
(£ MILLIONS)

DELIVERY MODE	REVENUE	PERCENT
Professional Services	34.2	40
Software Products	3.4	4
Processing Services	21.4	25
Network Services	4.3	5
Systems Operation	5.1	6
Systems Integration	17.2	20
TOTAL	85.6	100

Exhibit D

1990 MARKET ANALYSIS BY COUNTRY (£ MILLIONS)

COUNTRY	REVENUE	PERCENT
U.K.	41.4	43
Netherlands	48.0	50
Germany	6.8	7
TOTAL	96.2	100

Financial Information

Exhibit E

FIVE YEAR FINANCIAL SUMMARY (FYE 31-12) (£ MILLIONS)

YEAR	1986	1987	1988	1989	1990
Revenues	51.2	56.8	64.6	85.6	96.2
Annual Growth Rate (%)	26%	11%	14%	32%	12%
Profits before Taxes	4.7	5.6	5.0	8.6	7.0
Annual Growth Rate (%)	81%	19%	(11%)	72%	(19%)
Profit after Taxes	2.7	3.3	3.1	5.1	3.5
Annual Growth Rate (%)	108%	22%	(6%)	65%	(31%)
% Net Profit	5.3%	5.8%	4.8%	6.0%	3.6%
Earnings per Share	20.47p	24.00p	22.37p	36.79p	25.38p

D Datev EG

DATEV EG

Paumgartnerstrasse 6-14
8500 Nurnberg 80
Germany
Tel: 49 911 276-0
Fax: 49 911 276 3196

MD: Heinz Sebiger
Status: Private
Number of Employees: 3,440
Revenue (FYE 31-12-90): DM 610 million
(estimated)

The Company

DATEV was founded in 1966. It is a cooperative society maintaining an EDP service centre for the tax-consulting profession in Germany.

Members (31,000) of the cooperative are offered support and advice in the consulting and servicing of client companies. Members can avail themselves of a range of EDP service programs. Drawing on a base of general accounting and annual financial statement programs, DATEV has developed an information system that supports the tax-consultant in dealing with problems and data as well as in computing taxes. Depending on the field of application and the program, tax-consultants can decide whether the data should be processed at the computer centre, on a personal computer in the office or by combination of both techniques. Access to the large computing and processing capacities is ensured at all times through the company's own data network.

As of December 1990, DATEV employed 3,440 people.

Key Products and Services

DATEV services are offered as combined programs for personal computers, interactive dialogue and computer centre applications.

- Programs for general accounting and annual financial statements
- Programs for tax computation
- Programs for economic advising and office organization
- Trade related solutions
- Data collection
- Data banks
- Teleprocessing of data
- Training and Consulting

Market Analysis

Exhibit A

1990 MARKET ANALYSIS BY DELIVERY MODE (DM MILLIONS)

INPUT DELIVERY MODE	REVENUE	PERCENT
Processing Services	470	77
Software Products	90	15
Professional Services	50	8
TOTAL	610	100

Financial Information

Exhibit B

FIVE YEAR FINANCIAL SUMMARY (FYE 31-12) (DM MILLIONS)

YEAR	1986	1987	1988	1989	1990
Revenue	399.3	452.9	501.7	535.5	610.0*
Profit before Taxes	37.4	50.5	50.2	26.5	N/A
Profit after Taxes	12.3	16.4	17.9	7.3	N/A

* Estimated.

100% of Datev's revenues are generated in the German market.

E **Finsiel SpA**

FINSIEL SpA

Via Isonzo 21/B

00198 - Roma

Italy

Tel: 39 6 84311/851505

Fax: 39 6 84312236

CEO: Alessadro Alberigi Quaranta

MD: Dott. Vittorio Salvati

Status: Subsidiary

Number of Employees: 5,400

Revenue (FYE 31-12-89): Lire 900 billions

The Company

The Finsiel Group was started in 1969 as ITALSIEL; in 1981 the Group was reorganised within a holding structure and the Finsiel name was introduced.

Finsiel is owned by the Italian State via IRI (83.3% of shares) and Banca d'Italia (16.7% of shares).

IRI is the holding company for the very large group of companies owned by the State in Italy; Banca d'Italia is the central bank.

In December 1988, the Group was based on 14 companies: as shown in the table on the next page.

Exhibit A

GROUP COMPANIES

NAME	SHAREHOLDERS	PERCENT
ITALSIEL	IRI Finsiel	49.1 17.7
Insiel	Finsiel Others	52.0 48.0
I C Soft	Finsiel	100.0
Sibi	Finsiel Others	35.0 65.0
Netsiel	Finsiel Italsiel	30.0 70.0
SISPI	Finsiel IRI	47.00 2.0
Datasiel	Finsiel IRI Others	49.0 2.0 49.0
Intersiel	Finsiel	50.0
Sogei	Finsiel	100.0
Tecsiel	Finsiel Italsiel Sogei	40.0 30.0 30.0
Informatica Trentina	Finsiel	41.0
Agrisiel	Finsiel IRI	49.0 6.0
G.I. Informatica	Finsiel IRI	40.0 60.0
Softsiel (U.S.)	Finsiel Italsiel IC Soft Tecsiel	15.0 15.0 15.0 55.0

The Finsiel Group has shareholdings in the following companies:

Exhibit B

MINORITY HOLDINGS

NAME	CAPITAL (LIRE BN)	SHAREHOLDING (Percent)
Telesoft	9.0	40.0
Venis	.25	40.0
Data Management	15.0	29.0
Tecnoporti	.5	25.0
Sistemi e Telematica Porto di Genova	0.5	5.0
Castalia	5.0	5.0
Ancifap	26.7	0.2
Comitsiel (Italsiel)	2.0	40.0
Saped (Italsiel)	1.0	20.0
SIT (Insiel)	.2	10.00
Edindustria	.2	9.5
BIC Napoli (IC Soft)	1.0	7.0
Racom Teledata (Italsiel)	65.0	5.0

Finsiel launched a joint venture with SIP-STET (the Italian telecomms companies) called TELESOFT, with the purpose of developing telecommunications software for the Italian network system. Finsiel controls 40% of the shares and forecasts Telesoft to have over 1,000 employees and L 100 billion turnover by the end of 1991.

In October 1988, Finsiel signed an agreement of cooperation for software development and education in the U.S.S.R.; contacts are now being developed for possible expansion in the Cyprus and Spanish markets (central governments' supply).

Strategy

Expansion is carried out through the formation of joint ventures with customers. Once the joint venture company is established, it moves from providing services to the original customer to serving the general market.

Finsiel invests over 15% of its revenues in R&D and in training of its own personnel. The recent drive for expansion by Finsiel from the government market into the private sector is considered one of the major factors reinforcing the recent trends in the Italian IS industry.

Key Products and Services

The main activities of the Finsiel Group are, in order of importance:

The processing services category includes a percentage of network services that could not be quantified. Finsiel operates several systems that belong to its clients. One of its subsidiaries in Milan, Data Management, also offers disaster recovery and systems operations services.

- Professional Services

Design, development and implementation of information systems, mainly for public authorities, consulting services, training and education. Finsiel uses the Dafne methodology which it has developed in-house. According to the company, this fosters an integrated decentralisation of activities that increases software productivity and quality.

- Software Products

These are advanced applications and expert systems for industrial automation and graphic data processing, systems software products and software engineering methodologies and tools.

- Turnkey Systems/Systems Integration

Design, implementation and operation of complex inter-sector systems.

- Systems Operations, Processing and Network Services

Market Analysis

Exhibit C

1989 MARKET ANALYSIS BY DELIVERY MODE (LIRE BILLIONS)

DELIVERY MODE	REVENUE	PERCENT
Software Products	7.6	1
Professional Services	340.7	49
Systems Operation and Processing Services	340.4	49
Systems Integration	2.0	1
TOTAL	690.7	100
Equipment	175.3	
Other revenues	35.8	
GRAND TOTAL	901.8	100

Exhibit D

1989 MARKET ANALYSIS BY INDUSTRY SECTOR (LIRE BILLIONS)

INDUSTRIAL SECTOR	REVENUE	PERCENT
Central Government	414.0	60
Local authorities	103.5	15
Discrete manufacturing	69.0	10
Banking	55.2	8
Others	48.3	7
TOTAL	690.0	100

Finsiel is also active in the U.S. market with its subsidiary Softsiel, which supports software systems products that are marketed by distributors.

INPUT estimates that approximately Lire 690 billion of Finsiel's revenues in calendar year 1989 were generated from the computer software and services market within Western Europe.

Financial Information

Exhibit E

FOUR-YEAR FINANCIAL SUMMARY (FYE 31-12) (LIRE BILLIONS)

YEAR	1986	1987	1988	1989
Revenues	455	575	699	900
Annual Growth Rate		26%	22%	29%
Profit before Taxes	NA		43.0	37.2
Profit after Taxes	NA	17.7	21.6	17.3
% Net Profit		3.1%	3.1%	1.9%

F GE Information Services

GE INFORMATION SERVICES

Via San Gregorio, 34
I-20124 Milan, Italy
Tel: 39 2 667051

Giuliano Venturi, Vice-President Europe

Division of General Electric Company,
Communications and Services
Organization

Total Employees: 2,600

Total Revenue, Fiscal Year End
12/31/90:

\$575 million

Noncaptive Revenue: \$525 million

European Revenues: \$230 million

* INPUT estimates

The Company

GE Information Services (GEIS) currently provides transaction and utility processing; inquiry/response, electronic data interchange, and value-added network services; systems integration; and software development and network management professional services to over 10,000 clients worldwide. Its focused industries include international banking and financial services, international trade and transportation, retail/apparel/merchandising, telecommunications, automotive/heavy equipment/manufacturing, petroleum/chemical, and high technology.

- GEIS was formed in 1979 as General Electric Information Services Company (GEISCO) to consolidate General Electric Company's (GE) MARK III worldwide interactive and remote batch processing services, originally introduced in 1965 under the MARK I name as the first interactive processing service commercially available in the U.S. The organization unified the U.S. operations handled by GE's Information Services Division with European and Australian operations run by Honeywell. Honeywell retained a 16% interest in GEISCO until January 1972, when GE purchased Honeywell's interest for approximately \$70 million.
- On January 1, 1984, GEISCO once again became an internal component of GE and its legal name became GE Information Services.

- GEIS now reports to GE's Communications and Services Organization (CSO), which was formed in 1986 to meld certain GE operations with former RCA units.
- GE Consulting Services, based in Rockville (MD), was formerly part of GEIS and now operates as a separate unit under CSO.
- GE Computer Services, based in Atlanta, was formerly part of GEIS and now operates as a separate unit under CSO.

INPUT estimates that GEIS's total 1990 revenue was approximately \$575 million.

- The company had almost 10,000 client by the end of 1990, compared to 6,000 clients in 1988 and 5,000 clients in 1987.
- Revenue provided to various units of General Electric Company is estimated at approximately 5% of total revenue.

Effective October 1989, Hellene S. Runtagh was appointed President of GEIS, replacing James McNerney Jr. who has been promoted to executive vice president of GE Capital.

During early 1989, GEIS sold its EMC*EXPRESS electronic medical claims business to GTE Information Services. Terms of the sale were not disclosed. INPUT estimates that EMC*EXPRESS contributed less than \$500,000 to GEIS' 1988 revenue.

GEIS' primary competitors include AT&T Istel, BT Tymnet, IBM IN, Infonet, Sprint International, Automatic Data Processing (Autonet), and Reuters.

- In the EDI and electronic mail area GEIS also competes with Sterling Software (Ordernet), MCI, AT&T Easylink, and various PTT-provided services.

Key Products and Services

INPUT estimates that approximately 85% of GEIS's 1990 revenue was derived from network and processing services, and the remaining 15% from professional services and systems integration activities.

By Network

GEIS offers its clients three delivery systems for its processing/network services as follows:

- The MARK III^R Service consists of the following major elements, serving over 8,000 clients worldwide around half of whom will be based in Europe or will have European operations:
 - Foreground Service is the primary offering on the MARK III System, consisting of interactive remote processing on Honeywell/NEC computers. GEIS offers two libraries consisting of over 2,000 software products, a summary of which is found in Exhibit A.
- Products are developed by GEIS or licensed from major software vendors. These third-party packages are fully supported by GEIS.
- The MARK 3000TM Service is an IBM-compatible companion service to the Honeywell/NEC-based offerings. Remote batch and interactive processing on large-scale IBM computers is available. Selected applications available on this service are shown in Exhibit B. Usage is split between general business applications and engineering, simulation, and statistical analysis applications.
- The MARK 9000SM Service, announced in January 1988, is a bundled offering of IBM MVS/XA operating environment processing, storage, and IBM-compatible network services.
 - The service is targeted to clients whose business requirements include multiple, distributed 9370s, remote access to one 9370, the integration of their 9370 systems with other mainframe systems, or a CICS capability. It can be used for departmental processing; development, prototyping, and conversions; in distributed configurations for store-and-forward processing and network switching/management; and as a component in custom systems for vertical applications, disaster recovery, and remote facilities management.
 - The MARK 9000 Service is available in Europe and the U.S. GEIS already has several contracts from the U.S., France, Italy, and the U.K. Current clients include National Westminster Bank.

Exhibit A

	APPLICATIONS AVAILABLE ON MARK III SERVICE
APPLICATION AREA/PRODUCT NAME	APPLICATION AREA/PRODUCT NAME
<p>OPERATING ENVIRONMENT</p> <ul style="list-style-type: none"> - HONEYWELL DPS 90/ACOS 1000 - BANCOR*EXPRESS <p>PROGRAMMING LANGUAGES SUPPORTED</p> <ul style="list-style-type: none"> - FORTRAN 77 - PL1 - COBOL - BASIC <p>DATA MANAGEMENT SOFTWARE</p> <ul style="list-style-type: none"> - DMS III - FLEXIMIS - HISAM - SAS - DM IV - REQUEST - SYSTEM 2000- SITE II - MARK IV - EPICS - DCM - MARDATA <p>DATA BASES AVAILABLE</p> <ul style="list-style-type: none"> - MAP (ECONOMETRIC DATA BASE) - CURRENCY DATA BASE SERVICE - SECURITIES DATA BASE SERVICE - VALUELINE - NEMA (NATIONAL ELECTRICAL MFG.) - DEPARTMENT OF COMMERCE (SIC) - FEDERAL TRADE COMMISSION - CITIBASE - PETROLEUM INSTITUTE - DWIGHT'S ENERGYDATA - CORPORATE FINANCIAL DATA SERVICE - BUSINESS AND FINANCIAL DATA BANK - COMMODITY FUTURES - AHAM (HOME APPLIANCE MANUFACTURING) - DOW JONES NEWS/RETRIEVAL <p>FINANCIAL APPLICATIONS/TOOLS</p> <ul style="list-style-type: none"> - GENERAL BUSINESS ACCOUNTING - FINANCIAL ANALYSIS - FORECASTING - AUDITING <p>BANKING/CASH MANAGEMENT</p> <ul style="list-style-type: none"> - GLOBAL RISK MANAGEMENT SYSTEMS - TRADE WATCH - FUNDSNET - LEAPP <p>CHEMICAL</p> <p>COMMUNICATIONS</p> <ul style="list-style-type: none"> - TELEPHONE CO. OPERATIONS & FINANCE <p>CONSTRUCTION</p> <p>DISTRIBUTION MANAGEMENT</p>	<p>ELECTRONIC DATA INTERCHANGE</p> <ul style="list-style-type: none"> - EDI*EXPRESS SYSTEM - EDI*PC SYSTEM - EDI*CENTRAL SYSTEM - BPS CENTRAL <p>ELECTRONIC MAIL</p> <ul style="list-style-type: none"> - BUSINESS CONNECT - BUSINESSTALK - QUIK-COM - QUIKNEWS - X.400 ACCESS <p>ENGINEERING</p> <ul style="list-style-type: none"> - CIVIL - MECHANICAL - ELECTRICAL AND ELECTRONIC <p>HUMAN RESOURCE MANAGEMENT</p> <p>INSURANCE</p> <p>INVESTMENT RESOURCE MANAGEMENT</p> <p>INVENTORY CONTROL/ORDER SERVICE</p> <p>GRAPHICS AND PLOTTING</p> <p>LINEAR PROGRAMMING</p> <p>MANUFACTURING</p> <ul style="list-style-type: none"> - INDUSTRIAL ENGINEERING - PLASTICS ENGINEERING - MANUFACTURING MANAGEMENT - NUMERICAL CONTROL - PRODUCTION SCHEDULING - QUALITY CONTROL <p>MARKETING AND SALES</p> <p>MATHEMATICS</p> <p>OPERATIONS RESEARCH AND MODELING</p> <p>PROJECT PLANNING AND MANAGEMENT</p> <p>SIMULATION AND MODELING</p> <p>STATISTICAL ANALYSIS AND FORECASTING</p> <p>TRANSPORTATION</p> <ul style="list-style-type: none"> - MARINE MANAGEMENT - EQUIPMENT MANAGEMENT SYSTEMS - SHIPMENT TRACKING SYSTEM <p>MISCELLANEOUS</p> <ul style="list-style-type: none"> - GENIE

Exhibit B

APPLICATIONS AVAILABLE ON MARK 3000 SERVICE	
APPLICATION AREA/PRODUCT NAME	APPLICATION AREA/PRODUCT NAME
<p>OPERATING ENVIRONMENT</p> <ul style="list-style-type: none">- IBM 3081, MVS, TSO, CICS- IBM 4381, VM- IBM 9000 <p>PROGRAMMING LANGUAGES SUPPORTED</p> <ul style="list-style-type: none">- FORTRAN 77- COBOL- PL/1- BASIC <p>UTILITY SOFTWARE</p> <ul style="list-style-type: none">- LIBRARIAN- REMOTE MEDIA SERVICE- SYNC SORT <p>PRODUCTIVITY TOOLS</p> <ul style="list-style-type: none">- ACCOLADE- DOS/OS CONVERSION PACKAGE- ISPF/PDF <p>DATA BASE MANAGEMENT</p> <ul style="list-style-type: none">- FOCUS- IDMS- SQL/DS <p>FINANCIAL APPLICATIONS/TOOLS</p> <ul style="list-style-type: none">- GENERAL ACCOUNTING- FINANCIAL PLANNING (FCP-EPS, IFPS)- FORECASTING (SIMPLAN)- BUDGETING AND MODELING (CPL/TACTIX) <p>GRAPHICS</p> <ul style="list-style-type: none">- TELL-A-GRAF- DISSPLA- GDDM <p>STATISTICS</p> <ul style="list-style-type: none">- SAS	<p>OTHER INFORMATION MANAGEMENT</p> <ul style="list-style-type: none">- DCF- OXYCALC- MEGACALC- SCRIPT/VS- WYLBUR <p>PROJECT MANAGEMENT</p> <ul style="list-style-type: none">- PROJACS- PROJECT/2 <p>SCIENTIFIC AND ENGINEERING</p> <ul style="list-style-type: none">- MECHANICAL ENGINEERING AND DESIGN<ul style="list-style-type: none">ùNASTRANùSUPERBùANSYS- CIRCUIT ANALYSIS<ul style="list-style-type: none">ùASTAP <p>ORDER SERVICE</p> <p>MANUFACTURING</p> <ul style="list-style-type: none">- PLASTICS ENGINEERING <p>DISTRIBUTION</p> <ul style="list-style-type: none">- VEHICLE ROUTING- VSPX (VEHICLE SCHEDULING) <p>MATHEMATICS</p> <ul style="list-style-type: none">- MPS III- MPSX/370- SPSS <p>PLANNING AND MODELING</p> <ul style="list-style-type: none">- BMDP (PRODUCTION SCHEDULING)- CSMP III (SIMULATION)- DYNAMO III/F (SIMULATION)- GPSS V (SIMULATION)- KETNET- MAGEN (MATRIX GENERATOR) <p>OTHER</p> <ul style="list-style-type: none">- GE*TUTOR

- The GEIS Network is the company's worldwide teleprocessing network based on a proprietary packet-switching protocol. It permits multisite organizations to achieve data transmission to dispersed terminals and host computers around the world with approximately 600 access points in the U.S. and in-country direct access in 35 countries.
- The GEIS network supports asynchronous, IBM-compatible synchronous (including 3270 BSC, 3270 SNA/SDLC, 2780/3780 BSC, 3770 SNA), and X.25 protocols.
- In addition to supporting SNI interconnections among SNA networks, it offers a variety of error-correcting protocols, such as MNP and XMODEM, and it provides 3270 emulation via NET*CONNECT 3270 and Simware's SIM 3278, SIMPC, and MAC3270.

By Application

GEIS services are categorized into the following application areas:

- Financial Information Services
- Electronic Data Interchange Products and Services
- Business Communications Products and Services
- Value-Added Network Services
- Managed Network Services
- On-line Consumer Information Services

Financial Information Services:

GE Financial Information Services, a unit of GEIS formed in 1989, supports international network applications for banking and financial institutions. GEIS offers the following products/services which are generally used as part of a distributed processing service:

- FUNDSNET™ Money Transfer System is a microcomputer-based automated money transfer service targeted to corporate treasurers. Through a joint marketing agreement with Racal-Guardata, the Money Transfer System includes end-to-end authentication as a means of protecting the money transfer instructions.
- FUNDSNET™ Balance Reporting System is an automated balance and transaction reporting service used by corporate clients to manage their global cash in an environment of differing time zones and multiple currencies.
- The Global Limits System is a customized software package designed to assist international banks manage and control their risk exposures in money markets, in credit granting and other operations, 24 hours a day, in trading centers around the world.

- TRADEWATCH™, introduced in September 1989, is a settlement instructions and reporting system for international securities settlement institutions.
- The BANCOR*EXPRESS™ System is an electronic transfer and tracking system designed to facilitate and expedite the worldwide exchange of financial data.
- BPS*CENTRAL™ System, announced in December 1989, allows banks to accept electronic payment/order remittance advices from EDI users, reformat them into ACH payment instruction format, and forward them to a third party's bank through the ACH network for settlement.
 - Incoming ACH instructions may be reformatted to ANSI 820, 823, or BAI lockbox formats. Banks can also use the BPS*CENTRAL System for their internal EDI processing with their customers and suppliers.
 - The first two banks to use the BPS*CENTRAL System are First Interstate Bank (Los Angeles) and SEAFIRST (Seattle).
- In November 1989, GEIS introduced the availability of Leveraged EDI and Payments Program (LEAPP), a multilevel EDI/EFT program for banks. LEAPP provides banks the opportunity to combine their corporate client relationships and payments expertise with GEIS' EDI network capabilities.

Electronic Data Interchange Products and Services:

EDI products and services support the electronic processing and transmission between trading partners of standard formatted data for business documents in a variety of public and private formats using different protocols and access methods.

- GEIS' EDI services are used by clients in the trade and transportation, manufacturing, and retail industries. GEIS' EDI network currently connects more than 6,000 trading partners worldwide, of whom over 4,000 trade in Europe.
- The EDI*EXPRESS™ System, introduced in November 1985, provides the capabilities for sending, receiving, translating, and compliance checking of EDI messages. The system also provides document and/or interchange level auditing and reporting to the user for tracking and monitoring system usage.
 - Two levels of service are available. The Interchange Level Service, announced in December 1989, enables customers to select a level of service commensurate with the requirements of their applications.

The service performs control verification and provides tracking reports for interchanges. The Document Level Service, available since 1987, offers network control verification and tracking at both the interchange and document levels.

- EPS*EXPRESS™ Service, introduced in January 1990, permits EDI*EXPRESS clients to initiate electronic payments to their vendors.

- The EDI*PC™ System, introduced in November 1985, is a software package for IBM and compatible microcomputers that allows trading partners to send and receive EDI documents and status reports in a standard format to and from the EDI*EXPRESS System. It can be used as a workstation or as a front-end to an in-house computer for translation. The software licenses for \$1,450.
- The EDI*CENTRAL™ System, introduced in July 1988, is a mainframe software package supporting COBOL 74 for mainframe EDI gateways supporting multiple distributed business applications. It allows the client to send EDI data to and from its in-house application system and provides EDI translation between application data and EDI standard formats. The system licenses for \$20,000 for the first copy, with additional copies per company at \$12,000 each. The annual subscription service fee is \$2,400 after the first year.
- The DESIGN*EXPRESS™ System is a family of products that allows engineering/manufacturing design data to be processed and transmitted electronically in several types of document formats. DESIGN*EXPRESS products became commercially available in the U.S. in 1989.
 - GEIS has designated Microdynamics (Dallas) as a Value-Added Service Provider for DESIGN*EXPRESS to the sewn-goods industry.
 - In February 1989, GEIS announced an alliance with International TechneGroup Inc. (ITI) whereby ITI will provide CAD translation software and consulting services to users of GEIS' DESIGN*EXPRESS services.
- UPC*EXPRESS Catalog is a service that manages and distributes Universal Product Code (UPC) numbers and their description information for vendors and their retailers. This data base of UPC information is integrated with the EDI*EXPRESS System so that vendors and retailers can use EDI to electronically maintain and receive UPC catalog updates.
- GEIS also supports several private and industry association networks, including Catspeed (Caterpillar Tractor Company's private EDI implementation), Haggar Apparel Company's HOP (Haggar Order Processing), LeviLink (Levi-Strauss), PetroEx (the Petroleum Data Exchange System), The Poand Transnet (operated by the Motor Equipment Manufacturers Association, Englewood Cliffs, NJ).
- Other EDI-related activities include the following:
 - In November 1989, Sea-Land Service Inc., Rotterdam, selected GEIS' EDI network service to connect EDI trading partners in the U.K.

- In June 1989, GEIS was awarded a one-year contract (with two option years) by the General Services Administration (GSA) to provide EDI services to the GSA/Federal Supply Service. GEIS will provide EDI*CENTRAL software for a Honeywell DPS8 mainframe and will provide EDI*EXPRESS network services as the interface to GSA's electronic trading partners.
- GEIS is supplying network-based services in six European countries to Electronic Data Systems as part of EDS' EDI project for General Motors.
- Working with Baxter Travenol (Deerfield, IL), GEIS is expanding the scope of that company's ASAP Express private EDI purchasing clearinghouse system for hospitals.
- GEIS Ltd. has joined with ICL (now 80% owned by Fijitsu of Japan) to form International Network Services Ltd.(INS), offering EDI services in the U.K.. In February 1988, INS launched its international "Bridge," joining the INS U.K. EDI services to the EDI service provided by GEIS.
- GEIS was selected by CEFIC, the European Council of Chemical Manufacturers' Federations, as the single clearinghouse to provide EDI services to the CEFIC EDI trial for the European Chemical Industry.
- With Finland's Nokia Information Network Services, the company established a processing center in 1988 for domestic and international EDI, licensing its EDI software to the partner.
- GEIS and Swedish software firm Transtema are integrating their systems and services, targeting the freight and shipping industries.
- In May 1988, GEIS was selected by the Port Authority of New York & New Jersey to provide the EDI*EXPRESS System to the Port's Automated Cargo Expediting System. The system became commercially available in May 1989.
- GEIS has EDI-related alliances with various third parties to sell its services along with their software and equipment. The company currently has agreements with:
 - ACS Network Systems (Concord, CA) for sales to the apparel industry.
 - American Business Computer (Farmington Hills, MI) for the automotive industry.
 - Can/Am Tech (Hamilton, Ontario) for sales and support in the metals industry.
 - Microdynamics (Dallas, TX) for marketing DESIGN*EXPRESS to the sewn-goods and apparel industry.
 - Supply-Tech (Southfield, MI) for sales to the automotive industry.

- GEIS also provides EDI implementation services, including training, conducting trading partner conferences, follow-up conferences with technical support, developing specialized test procedures, customizing documentation, and providing overall project management.

Business Communications Products and Services:

GEIS offers a family of products for office communications and automation linking geographically dispersed operations via its worldwide teleprocessing network.

- The BusinessTalk™ System is an intelligent communications capability designed to process, distribute, and retrieve information for members of a geographically dispersed business community via the MARK III Foreground Service through an Apple Macintosh or IBM PC-compatible computer. BusinessTalk combines the functions of textual data bases with a key word search, bulletin boards, electronic mail, and graphics.
- The QUIK-COMM™ System is a global electronic mailbox service that is designed to integrate multisite, multinational business communications for public and private mail systems. The system accommodates eight languages in addition to English.
- Personal Computer Mailbox is a microcomputer-based integrated application program designed to provide a user with the tools necessary to write, send, receive, and file QUIK-COMM messages.
- PC Mailbox Multiuser allows for mail administration for multiple QUIK-COMM users and allows a microcomputer to function as an internal message center.
- Bulletin Board provides electronic information sharing with large public and private audiences via one-way and two-way electronic communications.
- Telex Access permits QUIK-COMM users to send messages to and receive messages from Telex addresses during a QUIK-COMM session.
- QUIK-GRAM™ Service enables QUIK-COMM users to deliver electronically produced paper mail messages to virtually anyone with a U.S or Canadian postal address.
- QUIK-COMM to FAX allows QUIK-COMM messages to be send directly from a PC to fax machines.
- QUIK-COMM Service Connectors are interface capabilities that permit users of IBM PROFS, DISOSS, DEC All-In-1, Wang OFFICE, Rydex Messaging System (IBM AS/400 or System/3x), 3 + Mail LAN System, or CC:Mail LAN Systems to send messages/documents to QUIK-COMM users.

- In October 1989, GEIS announced the commercial availability in the U.S. of X.400 standard access to the QUIK-COMM family of products. In February 1990, GEIS announced an X.400 interconnect to Western Union's EasyLink electronic messaging service.
- In March 1991, GE announced that it had a contract from the Netherlands Ministry of Internal Affairs agency (called GBA) to develop and operate an electronic message handling service for Dutch government and municipal offices (some 1,000 offices all told). This X.400 based service follows from a pilot service set up for GBA in 1987.
- GEIS has X.400 service interconnection agreements with the following vendors and services:

Vendors	Country	Service
AT&T	US	ATTMAIL
BT Tymnet	US	DIALCOM
IBM IN	GB	IBMX400
MCI	US	MCI
Sprint Int'l (US)	US	TELEMAIL
Sprint Int'l (UK)	GB	TMAILUK
Western Union	US	WESTERN UNION
Helsinki Tel Co	FI	ELISA
Radio Austria	A	ADA400
Swiss Telecom	CH	ARCOM
BT Plc	GB	GOLD400
PTT Tel Netherlands	NL	NET400

Agreements with eight others are under negotiation.

Value-Added Network Services:

The MARK*NET Service is a value-added network service offered only to clients in the U.S. and Canada through direct access, based on the GEIS Network and local support services in both countries.

- A MARK*NET client who has users outside of North America typically accesses the service via Public Data Network (PDN) access in the local country, interconnected to MARK*NET via International Record Carrier (IRC) gateways. GEIS provides international access to MARK*NET in this manner from approximately 70 countries.
- MARK*NET Service has all the technical functionality inherent in the GEIS network, including multiple protocol support, protocol conversion services, error correcting protocols, full network redundancy, a security administration and control system, and on-line monitoring capabilities.
- Access nodes include dedicated leased line access, private dial access, and public dial access.

Managed Network Services:

Managed Network Services (MNS), introduced in 1987, is a specialized teleprocessing service that provides client organizations with custom-tailored network and session management of their international information and communications systems. It is sold worldwide and in June 1991 had over 70 clients:

- MNS is a single, integrated service that provides the following:
 - GEIS consultants, with expertise in applications, networking, and client support, prepare tailored proposals designed for specific client requirements
 - Network and session management using MNS Session Manager, a network management teleprocessing application
 - Support in managing the global integration of information by coordinating with third-party vendors such as Postal Telephone and Telegraph (PTT) authorities and by offering the client a single worldwide contract.
 - Worldwide support 24 hours a day, seven days a week once service is in place.
- There are currently approximately 70 multinational clients using MNS, of whom some 30 are Europe-based companies.

On-line Consumer Information Services:

GENie™ (GE Network for Information Exchange) is an electronic consumer information service for microcomputer end users.

- GENie permits access to a variety of services, including news and information, financial, travel, shopping, computer games and references, electronic mail, and real-time conferences.
- Services added to GENie during 1989 include Charles Schwab's discount brokerage and investment information services, Newsbytes News Service, and the Executive Desk Register of Publicly Held Corporations.
- In October 1989, GEIS announced expanded GENie service access to 166 cities throughout Canada via Telecom Canada's iNet 2000 gateway service.
- First marketed in October 1985, GENie now has over 180,000 individual subscribers throughout the U.S. and Canada and in 20 cities in Japan.
- By June 1991, it was available in Europe in Austria, Germany and Switzerland.

Other network-related announcements include the following:

- In February 1990, U.S. 2400 bps asynchronous dial-up service availability was expanded from 393 cities as of year-end 1989 to 510 cities. In November 1989, GEIS also eliminated the \$1.00/hour 2400 bps access surcharge in its VAN service. GEIS is continuing to expand its international 2400 bps capability. 9600 bps asynchronous dial-up capability had by mid-1991 been made available in all US cities and in all major European centres of business.
- Credit*PRO™, announced in September 1989, is a fully integrated credit management system that automates and manages all the functions required for a retailer to offer credit to customers. Credit*PRO is available as a software package or on a service bureau basis.
- In June 1989, GEIS signed a joint venture agreement with STET, the telecommunications and electronics holding company of the Italian industrial conglomerate IRI.
 - Under the agreement, STET acquired a 40% interest in GEIS-Italy, GEIS's wholly-owned subsidiary in Italy. The company will be operated as a joint venture of STET and GEIS to provide value-added network services in Italy.

Professional services provided by GEIS include systems development and consulting, training, and documentation services.

Industry Markets

GEIS' 1990 revenue was derived approximately as follows:

	Worldwide	Western Europe
Banking	40%	45%
Manufacturing	32%	17%
Telecommunications	10%	3%
Trade and Transportation	10%	16%
Retail	5%	10%
Other	<u>3%</u>	<u>9%</u>
	100%	100%

GEIS currently has a client base of over 10,000 corporations and trade associations.

Geographic Markets

Approximately 50% of GEIS's 1990 revenue was derived from the U.S. and 50% from international sources.

GEIS products and services are offered through approximately 50 U.S. offices and offices in 34 countries, with global support and access provided by distributors, affiliates, or private data networks in 60 additional countries.

- U.S. regional offices are located in New York City, Atlanta, Chicago, and San Francisco.
- International offices are located in Australia, Austria, Belgium, Canada, France, Germany, Hong Kong, Ireland, Italy, The Netherlands, Norway, Singapore, Spain, Sweden, Switzerland, and the U.K.

Software Development Centers are located in Rockville (MD), Nashville (TN), and Dublin (Ireland).

GEIS's network provides clients with local dial-up services in 750 cities in more than 30 countries worldwide and is available 24 hours a day, seven days a week, 365 days a year. Coverage is extended to more than 90 countries by interconnections with public data networks and international record carriers.

Exhibit C

DELIVERY MODE ANALYSIS FOR GEIS IN EUROPE
(\$ MILLIONS)

INPUT DELIVERY MODE	REVENUE	PERCENT
Processing Services	100	43
Network Services	105	46
Professional Services	10	4
Equipment	15	7
TOTAL	230	100

Financial Information

The company's 1990 revenue of approximately \$230 million was derived across the whole of Western Europe.

Exhibit D

FIVE-YEAR FINANCIAL SUMMARY FOR GEIS IN EUROPE (\$ MILLIONS)

YEAR	1986	1987	1988	1989	1990
Revenue	165*	180*	175*	200*	230*
Annual Growth Rate (Percent)	-	9	(3)	14	15

* INPUT estimates.

Computer Hardware and Software

The GEIS network uses over 6,000 processing and communications computers, including over 500 minicomputers. Over 400 of these are BULL PMSDs, used to handle communications. Large-scale IBM, BULL and NEC processors are concentrated in supercenters in Rockville, Cleveland, and Amstelveen, Netherlands. These consist of:

- Twenty-seven BULL/NEC DPS 90/ACOS 1000s and two BULL DPS-9000s operating under GEIS proprietary software for interactive processing, on the MARK III service.
- One IBM 3090, one IBM 3081, one IBM 9121 and one IBM 4381 for interactive and remote batch processing on the MARK 3000 Service.

GEIS's teleprocessing network handles over 400,000 user sessions per day, transmitting over 300 million characters of data in and out of the system per hour.

The network uses VSAT satellite links, microwave links, 25 trans-oceanic undersea cables, and 350,000 miles of land-lines.

G
GSI (Generale De Service Informatique)

GSI (GENERALE DE SERVICE INFORMATIQUE)

25 boulevard de l'Amiral Bruix
75782 Paris Cedex 16
France
Tel: 33 1 45 02 74 75
Fax: 33 1 45 00 59 43

President: Jacques Raiman
Directeur General: Jacques Bentz
Status: Subsidiary
Number of Employees: 3,185
Revenue (FYE 31-12-90): FF 2,044 million

The Company

GSI was created in 1971 by CGE (Compagnie Generale d'Electricite). It subsequently became a subsidiary of Alcatel-Electronique (part of the CGE group).

In November 1987, the employees of GSI took control of 70% of the shares of the company. More than half of the employees of GSI are now shareholders.

Exhibit A

SHAREHOLDERS (31-12-1990)

SHAREHOLDERS	% OWNED
GSI-PARTNERS	67.66
GAN	10.36
BNP-BANEXI	8.46
BANQUE INDOSUEZ CHARTERHOUSE	
INITIATIVE & FINANCE	8.46
ALAN PATRICOF	2.48
CIE FINANCIERE DE	
ROTHSCHILD	2.48
OTHERS	0.10

Key Products and Services

GSI integrates software, services and computer networks to provide advanced solutions for the information processing, data transmission and management needs of modern corporation. GSI operates in 10 countries in Europe, North America and Asia.

GSI's specialised business sectors are:

- (1) Payroll and Human Resource Management**
- (2) Business Management**
- (3) Motor Trade**
- (4) Travel and Transportation**
- (5) Marketing and Economics**
- (6) Advanced Technologies**
- (7) Engineering Facilities Management**
- (8) Banking**

(1) Pay-roll and Human Resource Management

This sector offers complete solutions built on packages and services to meet all personnel management needs in:

- Time Management
- Payroll
- Personnel Administration
- Human Resource Management.

By marketing the same line of products Europe-wide, GSI offers multinational compatible information systems.

GSI is represented in Belgium, Canada, France, Germany, Italy, Spain, Switzerland and the U.K. It handles 3,000 clients which is an increase of 20% compared to 1989.

Products:

- ZADIG, G-XP, CLIPPER, PAPA-XP: Software products for payroll and personnel management on IBM mainframes, IBM AS 400, Digital and Bull.
- RESOURCE, KHRONOS-XP, PAYAMI: Software products for human resource and time management on micro-computers.
- ZADIG-MX, ZADIG-GP, ZADIG-SX, PAYAMI: Total service solutions for payroll and personnel management.

(2) Business Management

GSI's Business Management activity provides software for production, distribution, accounting and financial control. The activity's revenue rose to FF 350 million (1989: FF 308 million). Sales more than doubled in Belgium and the U.K. and grew 24% in the U.S. International development continues with the opening of a branch in Singapore to market Tolas Distribution software in Southeast Asia, and with work under way at new locations in the Netherlands and in Germany.

(Note: GSI has a partnership with Digital for the Tolas Distribution product which Digital chose to manage its European Logistics).

TOLAS DISTRIBUTION: GSI installed its product throughout Europe and the U.S.A. In 1990, a contract to install information systems for the world logistics facility for Apple Computer, Inc. further reinforced GSI's international capability.

ACCOUNTING AND FINANCIAL MANAGEMENT: Provides engineering, services and software packages for building information systems of large and medium sized companies.

TOLAS FINANCE: This is a software package for IBM large and medium scale systems (arch. 390, AS 400).

TOLAS PRODUCTION: GSI was the first company to offer a "just-in-time" module for computerised production control.

Geographic presence (France, Belgium, Switzerland, and Spain (via a distribution contract with Alcatel Sistemas de Informacion SA)) has been increased by new sites in Italy and Singapore during 1990.

(3) Motor Trade

This area provides sales information systems for automobile manufacturers and importers, fully integrated management for dealers, and information exchange between a manufacturer and his network.

Motor trade activity is organised around three areas of competence:

- **DMS (Dealer Management Systems)** offers integrated management systems for agencies and dealerships.
- **MSS (Marketing and Sales Services)** manages and updates data banks by name of profession for automobile makers intent on giving their networks optimal means to win and retain customers.

- DDS (Data Distribution Services) supplies data to industry networks on such information as required repair lead time, prices of spare parts. The Menu Pricing Service (MPS) combines all input needed to establish an estimate, enabling dealers and agents to give customers instant accurate and detailed cost information on repairs.

GSI's network is composed of over 8,000 dealers in eight European countries.

(4) Travel and Transportation

GSI provides information and communication systems for carriers and their customers. Areas of expertise are EDI services and links between air freight reservation systems. GSI Travel and Transportation is organised around three main activities:

- Transportation
- Travel
- Clearing

Transportation

GSI has strengthened its position with the acquisitions of the Dutch company UCOMS which specialize in the management of road, air and maritime carriers, and the German company Weber und Partner, a supplier of a micro computer integrated management system for haulier freight. GSI assures the development and operating of Transponet, an EDI service linking European carriers and their users.

Travel

The Travel sector was named prime contractor for the Eurotop project (development and distribution of electronic brochures for tour operators). The sector was chosen to head up development of Ulysse, a tourist information data base, in partnership with the International Federation of Automobile Clubs, GMF and IBM.

Clearing

Clearing won the contract to design a car rental clearing system between travel agents and Avis, Budget, Europcar and Hertz. The agreement will ultimately apply to 15 countries across Europe.

(5) Marketing & Economics

GSI Marketing and Economics assist companies in setting up their economic information systems.

With Data-Eco service, users can access data on domestic and world economies through a source-independent mode.

In 1990, GSI published the CD-ROM "CHELEM" that provides data on foreign trade. Credit Lyonnais, Elf and St.Gobain were the first users.

In October 1986, GSI acquired a controlling interest in European Automotive Services (EAS) from Chase Econometrics. EAS, which provides economic data for the automobile industry, reinforced GSI's expertise in this field.

The 1984 acquisition of Marketing Systems positions GSI in the front ranks of the European market.

During 1987, GSI rationalised and regrouped CFRO, GSI-ECO, Marketing Systems and GSI-EAS.

Packages available include: **Clotilde** (data analysis), **Dataeco** (processing of historical information), **Forsys** (short-term forecasting), **Market** (medium/long-term forecasting). **GSI-ECO** provides economic information from a world-wide database with over 1 million economic indicators.

(6) Advanced Technologies

This sector has four distinct units:

- GSI-Tecsi (France)
- GSI-Erli (France)
- GSI-Danet (Germany)
- GSI-Tecsidel (Spain)

The 550 engineers and consultants concentrate on four areas:

- Information Systems Architecture
- Telecommunications
- Real Time Intelligence
- Artificial Intelligence

GSI provides high level consulting in all of these areas as well as systems integration work and expert systems.

Telecommunications and natural language specialists worked closely with GSI Travel and Transportation to develop EUROTOP and ULYSSE.

In 1990, the expert systems and natural language activities were grouped together in GSI-ERLI, propelling it to the top ranks of European companies in artificial intelligence applications.

In Germany, GSI-Danet consolidated its leadership position in advanced information technology for telecommunications: GSI-Danet's OSI product "OSITEL/400" was selected as the X400 reference installation by the European Open Systems Test Consortium (OSTC) to verify the equivalence of the various laboratories for conformance testing.

A consortium of four major German banks has asked GSI-Danet for a study to plan and design a nation-wide telecommunication network that would link more than 8,000 branch offices.

(7) Engineering Facilities Management

With revenues growing 26% to reach FF 414 million in 1990, GSI consolidated its leadership position among French facilities management companies.

GSI offers complete engineering facilities and services linked to the design and operation of their information system and tailored to their IS policy.

GSI assists companies throughout the process of achieving optimal utilization of an information system:

- Design
- Communications and Information Architecture
- Integration of Services
- Systems and Software Packages
- Maintenance
- Configuration Management
- Continuous Remote Monitoring of Networks and Centres

In 1986, GSI installed a network linking together the French government's foreign-based export offices.

The French National Education Ministry asked GSI to create **Edutel**, an internal electronic mail system, with a videotex service centre to transmit news and data to teachers, parents and students. Edutel is currently one of the world's largest videotex service centres.

GSI-Banque has been working on a number of projects with two French banks, Compagnie Financiere de Suez and the Banque Nationale de Paris (BNP).

GSI won the Euro Disneyland facilities management contract in 1989.

(8) Banking

GSI answers all the needs from systems design to installation and operation.

GSI developed an offer of facilities management systems for the banking industry. Notably built around Archerys software, which GSI distributes through an agreement with the American company Systematics, it provides commercial banks with a complete, integrated solution.

Its competence in value added networks gives GSI an important edge in the design and implementation of remote electronic settlement systems.

GSI signed an exclusive partnership agreement with Systematics, the U.S. integrated banking software specialist. This agreement crowns five years of GSI's involvement in the banking sector. Products offered cover mutual funds and private banking management. GSI claims to have 25% of the employees savings management market.

Products:

STB2: Private banking management software. It is marketed as an integrated banking package and software development platform.

Archrys: Complete management of banking institutions.

OPHYR: Securities management product, manages mutual funds generated by employee savings programs.

Market Analysis

Exhibit B

1990 MARKET ANALYSIS BY ACTIVITY (FF MILLIONS)

ACTIVITY	REVENUE	PERCENT
Pay-roll and Personnel Management	516	25
Business Management	349	17
Motor Trade	165	8
Travel and Transportation	242	12
Marketing and Economics	37	2
Advanced Technologies	318	16
Engineering and Services	417	20
TOTAL	2,044	100

Exhibit C

1990 MARKET ANALYSIS BY GEOGRAPHIC AREA (FF MILLIONS)

GEOGRAPHIC AREA	REVENUE	PERCENT
France	1,402	68
Germany	208	10
United Kingdom	103	5
Spain	135	7
Switzerland	57	3
The U.S.A. and Canada	68	3
Italy	32	2
Belgium	30	1
The Netherlands	9	1
TOTAL	2,044	100

Financial Information

Exhibit D

FIVE-YEAR FINANCIAL SUMMARY (FYE 31-12) (FF MILLIONS)

YEAR	1986	1987	1988	1989	1990
Revenues	1,295	1,386	1,566	1,768	2,044
Annual Growth Rate		7%	13%	13%	15.6%
Profit before Taxes	NA	55.3	92.7	121.2	136.5
Profit after Taxes	13.1	29.3	62.2	79.5	92.8
% Net Profit	1%	2.1%	4.0%	4.5%	4.5%

H Raet N.V.

RAET N.V.

Groningensingel 1
P.O. Box 4077
6835 EA Arnhem
The Netherlands
Tel: 31 85 246 911
Fax: 31 85 215 852

Managing Board of Directors: H. Matthes
(Chairman), H. Gompelman, A.E.R.
Helmich, J.A.M. Rutges
Status: Private
Number of Employees: 2,268
Revenue (FYE 31-12-90): DFL 476.8
million

The Company

RAET NV was founded in 1957, and is a 100% privately owned company.

INPUT estimates RAET to be the 2nd largest software and services company in the Netherlands (after Volmac) in 1989.

In the Netherlands, RAET offers fully integrated and compatible information system products and services. Different services are offered to serve the specific needs of large companies, national and local government and semi-state organisations, health care, agricultural industry, trade, professional services and industry. Automation Center provides international support to large companies and a certain number of market segments such as direct mail, car dealers and trade houses.

RAET offers its products and services through a network of specialized units. The group's activities are organised into six market and technology orientated sectors:

- Large accounts
- Vertical markets
- Applications
- Technology & Infrastructure
- Participations
- International

Through autonomous growth and acquisitions, 1990 net sales increased by 30% to NLG 477 million (1989: NLG 367 million).

Exhibit A

SHAREHOLDERS	
SHAREHOLDER	PERCENT OWNED
Delta Lloyd	21.9
Heidemy Holding	21.9
Central Beheer	18.4
NIB	15.2
N.P.M.	6.2
Sequoia	6.2
RAET Bel (RAET Employees)	10.2

To support the company's policy of acquisition, share capital was increased through a private issue to existing and new shareholders during 1990.

As of January 1, 1990, the activities of VIZ were acquired and transferred to RAET Ziekenhuis Informatiesystemen (Hospital Information Systems). The company focusses all its activities on the hospital market.

Also as of January 1, 1990, the Promedico software package for general practitioners was acquired from ACS Sleenwijk B.V. and merged with the activities of RAET Health and Welfare.

As of July 1, 1990 full ownership was obtained of ACI (International) AG, Switzerland.

As of November 1, 1990, the ownership interest in LARC Computercentrum B.V. was increased from 51% to 76%.

As of November 1, 1990, Edimatrix (Netherlands) B.V. was acquired.

Mid 1990, a merger of ARC Automation, parts of Centraal Beheer Automation and parts of the RAET organisation resulted in a new company, RAET Applications.

The activities of AAG which were acquired in 1991 were integrated in RAET Health and Welfare.

A majority interest was acquired in SILVAC B.V. The company was added to RAET Integrated Services where it operates as an IBM AS/400 competence center.

Exhibit B

SUBSIDIARIES

NAME	COUNTRY	%OWNED
Algemeen Reken Centrum B.V.	The NL	100
Assyst CSC Ltd	Cyprus	100
ACI (International) AG	Switzerland	100
Information Share B.V.	The NL	100
RAET Advies B.V.	The NL	100
RAET Deelnemingen B.V.	The NL	100
RAET ILIS B.V.	The NL	100
RAET Opleidingen B.V.	The NL	100
RAET Systems & Services B.V	The NL	100
RAET Ziekenhuis Informatiesystemen B.V.	The NL	100
LARC Computercentrum B.V.	The NL	76
Systemaat B.V.	The NL	70
ACAC Beheer B.V.	The NL	50

Exhibit C

ASSOCIATED COMPANIES

NAME	COUNTRY	%OWNED
RAET Lokale Automatiserings -Diensten B.V.	The NL	50
RAET Land Use Management B.V.	The NL	33
ICIM B.V.	The NL	31.5
RIOS Groep B.V.	The NL	30
ILIS V.O.F.	The NL	25
Administra Computing Groep N.V.	Belgium	17
BIT Holdings Ltd	The U.K.	10

As of December 1990, RAET employed 2,268 staff. The average number of employees in 1990 was 1,932. 1,690 of the 2,268 staff were employed in the Netherlands and the rest in other European countries.

Key Products and Services

RAET offers its services and products through a network of specialised units. Its business activities are organised into six sectors:

- Large accounts
- Vertical markets
- Applications
- Technology & Infrastructure
- Participations
- International

Large Accounts

The Large accounts sector offers integrated services to large companies and government institutions.

RAET Integrated Services supplies software services (development and management of applications software), processing services and facilities management. Net sales in this sector increased from NLG 84 million in 1989 to NLG 98 million in 1990.

Vertical Markets

Sector sales increased from NLG 68 million in 1989 to NLG 88 million in 1990.

In the segment for institutional and private care, **RAET Health and Welfare** expects to increase its market share after the acquisitions of AAG Automatisering, the Dispensaries portfolio from Content Beheer and the Promedico portfolio from ACS-Sleeuwijk. In 1991 RAET is in a position to launch a complete information system catering to the needs of general practitioners.

RAET acquired the activities of the Vereniging Informatieverwerking Ziekenhuizen (VIZ) and combined them with its existing activities in a new company; **RAET Hospital Information Systems**. The software product VIZIE based on a VIZ development concept, is to provide the core of RAET's new open ended hospital information system (HIS). Development of the HIS-concept will be completed during 1991.

RAET Decentralised Government operates within the market for Dutch local government. For municipalities and Polder Boards, RAET offers comprehensive concepts with standard applications for minicomputer systems.

The Universal Municipal Integration Model (known as GUNIM) is used in small, medium and large municipalities. Applications most in demand are civil registry, social service, public finance, tax, real estate and payroll systems.

RAET Agriculture's possibilities are determined by market developments. The trend towards concentration and reorientation of agricultural activities was stronger in 1990 than previous years. In 1991, RAET will concentrate its efforts on further developing this sector, either alone or in concert with other firms with a strong position in the market.

Applications

All activities in horizontal application services previously conducted by RAET, ARC Automatisering and Centraal Beheer Automatisering were merged into a new company, RAET Applications. The company became operational July 1, 1990. At the year end 1990 net sales of NLG 124 million was reached (1989: NLG 117 million).

RAET Applications is divided into six business units.

RAET Standard Services offers mini and micro systems, standard software, computer courses and after sales services to the market in general.

RAET Notary & Legal has installed systems in more than 400 notary offices and will now extend its activities and services to law firms.

RAET Payroll & Human Resources is a market leader in payroll and personnel data processing, both in terms of computer services and in work station based systems.

RAET Associations, Foundations & Education operates within the administrative and financial information processing. The unit is also represented in local government departments, including education departments. New applications, some of them for primary schools will be presented in 1991.

RAET Trade & Industry offers industrial automation, CAD/CAM applications and information systems for wholesale trade. In 1990, the unit introduced the JD Edwards package as a new product for the Netherlands. In 1991, further new products will be launched.

RAET Accountancy, in addition to its existing products, the unit is working on new applications to be launched in 1991.

Technology & Infrastructure

To meet the demand for comprehensive services, the activities of RAET systems & Network Engineering were reorganised and reallocated over RAET Consultancy, RAET Information Processing and RAET Systems & Services. Sector sales increased to NLG 193 million in 1990 (1989: NLG 134 million).

RAET Consultancy specialises in strategy, policy and structure of organisations, information technology and infrastructure.

The development of **RAET Training Institute** fell short of expectations, owing to diminished demand. Steps have been taken to ensure that activities of the institute are more in line with those of other RAET companies so that their services may be offered as integral part of a company's product mix.

RAET Information Processing is an in-house service centre which supports other RAET companies by providing network and computer facilities. The company executes data processing jobs and develops products and services based on its know-how and facilities. RAET Information Processing also functions as a competence centre for computer and network infrastructure and value added services.

Due to reorganisation of RAET Information Processing, the start of EDI services has been delayed but will be urged on in 1991.

RAET Systems & Services is the result of the merger of RAET Micro Systems & Services with RAET Networks and RAET Office Center. The company meets the demand for decentralised information systems with personal computers, local and wide area networks, technical and logistical services, support services and office automation.

Directly related to the growth of the Unix market and to market demand, RAET Systems & Services became Value Added Remarketeer of IBM Unix-system RS/6000.

Participations

RAET Participations operates as a holding company for RAET N.V. participations which have not yet been assigned to a particular RAET company. It conducts negotiations when interests in the Netherlands are to be bought or sold. It offers management assistance to restructure other RAET companies or to determine company strategy and policy.

International

ACI (International) AG in Switzerland was acquired in 1990. It employs approximately 500 people and 1990 net sales were CHF 92 million. The company operates through ten branches in German speaking European countries and Belgium.

The services ACI offers include information system services, computer and network services, standard software and turnkey projects and systems. AC computer centres process information for large companies and organisations. Of special interest is its payroll package which is in increasing demand following the German re-unification.

Market Analysis

Exhibit D

1990 MARKET ANALYSIS BY SECTOR

SECTOR	REVENUE	PERCENT
Large accounts	98	21
Vertical markets	88	18
Applications	124	26
Technology & Infrastructure	193	40
International	61	13*
Internal sales	(87)	(18)
TOTAL	477	100

* Last six months of 1990.

Exhibit E

1989 MARKET ANALYSIS BY INPUT SERVICE MODE (DFL MILLIONS)

INPUT SERVICE MODE	REVENUE	PERCENT
Processing Services	120	30
Network Services	20	5
Software Products	20	5
Professional Services	180	45
Systems Integration	20	5
Systems Integration	40	10
TOTAL	400	100

Financial Information

Exhibit F

FIVE-YEAR FINANCIAL SUMMARY (FYE 31-12) (DFL MILLIONS)

YEAR	1986	1987	1988	1989	1990
Revenues	151	181	260	367	477
Annual Growth Rate (%)	38	20	44	41	30
Profit before Taxes	6	7	10	27	31
Annual Growth Rate (%)	36	16	25	170	15
Profit after Taxes			9	20	26
Annual Growth Rate (%)				122	30
EPS					

Approximately 11% of 1990 revenues were generated by autonomous growth, 19% were realized by companies and activities RAET acquired in 1990.

Appendices

A Forecast Reconciliation, 1990-1995

Exhibit A-1

Processing Services
Reconciliation of Market Forecast
Western Europe

	1990 Market			1995 Market			1990-1995		
	1990 Report (\$M)	1991 Report (\$M)	Variance (Percent)	1990 Report (\$M)	1991 Report (\$M)	Variance (Percent)	1990 CAGR (Percent)	1991 CAGR (Percent)	Variance
Processing Services	7,840	8,770	+12	12,040	12,470	+4	9	7	-2
- Transaction Processing	7,010	7,850	+12	10,540	11,040	+5	8	7	-1
- Utility Processing	240	260	+8	330	315	-5	7	7	-
- Other Processing	590	665	+13	1,170	1,120	-4	15	11	-4

The change in the size of the market in the base year of 1990 is very largely accounted for by changes in the dollar exchange rates across Europe. All currencies rose significantly against the dollar. This accounts for the 12% increase. The growth rate predictions have fallen slightly as a result of a general fall in inflation rates and an overall small negative effect of economic recession.

